

INDIAN CHRONOLOGY

(SOLAR, LUNAR AND PLANETARY)

A PRACTICAL GUIDE

TO THE

INTERPRETATION AND VARIFICATION

OF

TITHIS, NAKSHATRAS, HOROSCOPES

AND

OTHER INDIAN TIME-RECORDS

B.C. 1 TO A.D. 2000

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TO

The Hon'ble Mr. V. Krishnaswami Aiyar,

MEMBER OF THE EXECUTIVE COUNCIL

OF HIS EXCELLENCY THE GOVERNOR OF FORT ST. GEORGE,

THIS WORK

Undertaken and carried out under his kind encouragement and advice,

IS

by permission

respectfully dedicated.

P R E F A C E.

THIS book, which was announced to the public under various names *, is now issued under a title which restricts it to its original scope, namely, as a **Manual of Indian Chronology**, designed to present in one view and in a usable form all the material ordinarily required by investigators in that field of research.

The bulk of the tables, as well as of the letter-press, is devoted to a detailed exhibition of the *versus* of Indian Chronology, solar, lunar and planetary, with eclipses, week-days, English calendar months and dates, *adhika* and *kshaya masas*, and mean places of the Sun and major planets, from B.C. 1 to 2000. The portion of the work, called Table X, will, it is hoped, supply a long-felt want among epigraphists and Archæologists, official as well as non-official, in India, inasmuch as it will enable them to verify on the spot and *in less than a minute in any case*, the exact English equivalent of any Indian date occurring in any inscription as well as to test its genuineness. The instructions set opposite the Eye-table at the end of the book are alone sufficient for any person, however previously unacquainted with the subject, to calculate quite accurately the ending moment of a *tithi* or *nakshatra*.

The work is intended, however, for the use of a much wider public than the scientific few who are interested in Indian chronological research. The same principles, whereby we are enabled to re-call to the light of history the inscriptions that are being unearthed at the rate of a thousand every year by various Indian Epigraphical departments, continue to guide the religious observances and civil usages of millions of people in India at the present day, and no one interested in the social and religious life of this vast continent can fail to take at least some slight account of a system, so ancient and so thoroughly ingrained in the habits of the people. The Indian calendar is generally considered either too abstruse for popular use, or too inaccurate for scientific exposition, but neither of these objections is more than a prejudice. A good deal has been done in the past to put Indian chronology on its proper footing, namely, as the faithful handmaid of Indian history, and there is no reason why the torch so worthily carried in their hands by the late Professor Kielhorn, the present Dr. Fleet and other workers in the field, should not be kept bright and burning in the hands of their successors, provided they are equipped with the necessary knowledge of data and principles.

Lastly, there is hardly any person, holding a position of consequence, public or private, in India, who is not occasionally confronted with the citation of an Indian date. To Magistrates, Judges, Lawyers, Missionaries, Business Men of every description, as well as to Historians, it is of interest to know the meaning of chronological terms in daily use among the people, although all may not, equally with the epigraphist and the archæologist, feel inclined to enter upon a regular study of Indian chronology. Those with scanty leisure, Tables XII and XVIII, forming a luni-solar and planetary Ephemeris for 70 years A.D. 1840 to A.D. 1920, together with the simple instructions as to their use, contained in the Second and Fourth Parts of the book headed "Use of the Tables" and "Planetary Chronology" as well as the Eye-Table, will be found no less handy than serviceable. The publications ordinarily known by the name of *Jantri* are unscientific, and few of them are up to date, whereas the ephemeris portion of the present work will enable any one to understand and decide, with reference to first principles, any question of current Indian chronology for seventy years past and some ten years to come. A table (XV) has also been inserted to link together the Indian and Muhammadan calendars.

* "Tithis, Nakshatras and other Indian dates B.C. 1 to A.D. 2000" (*Indian Review* for May 1910); "*Indian Chronology with a Criticism on Indian Astrology*" (Advt. page of the *Journal of the South Indian Association*, etc.), etc.

The book necessarily contains a vast amount of figures and tables, but the perusal of no part of it will requisition a greater knowledge of mathematics than is implied in the four simple rules of Arithmetic. Decimals have been used freely in order to ensure accuracy, but not only have tables whereby the decimal parts of a day, degree, etc., can be converted into *ghatikas*, *palas*, hours, minutes and seconds, been freely inserted, but the more important tables for the calculation of anomalies and equations for *tithis* and *nakshatras* (Table IX) and the Nakshatra Table itself (Table XI) have been twice given once in the form of decimals and again as days, *ghatikas* and *palas*.

It was originally intended to limit this compilation to solar and lunar chronology, but the frequent occurrence, in chronological records, in Indian literature as well as in daily Indian life, of allusions to the mean or actual places of planets, induced the writer to add a considerable number of tables on this interesting, though somewhat difficult, subject. The tables of anomalies and equations, used for planets, are based mainly on those of *Vavilala Kuchinna*, as reproduced in Warren's *Kala Sankalita*. The computation of the geocentric longitudes of planets for the years A.D. 1840 to A.D. 1920, contained in Table XVIII, entailed an enormous number of detailed calculations, but the results will, it is hoped, be found sufficiently accurate for practical purposes. By "practical purposes" the author means solely the purposes of Indian chronology, and he wishes it to be distinctly understood that he does not believe in astrology any more than in the need for, or efficacy of, the fasts, festivals and donations mentioned in Chapter XVI, "Notes on tithis in relation to festivals", which find a place in this book, merely and solely because of the frequent references in inscriptions to Hindu fasts and feasts.

In conclusion, the author wishes to state that, while he has spared no pains to acquaint himself with the works of previous writers on the subject, he has endeavoured to work out details upon his own method which is explained in Part III—"Construction of Tables". To one honoured name in the field of Indian astronomy and chronology, that of **Professor Hermann Jacobi**, he wishes, though an utter stranger, to express special indebtedness, since to him the author owes his first knowledge of the subject as well as numerous illustrations serving to test the correctness of his method.

Lastly, he must thank the *Premier Press*, of Messrs. Hoe & Co., for the skill with which they have executed a work, which, though packed with figures, has been reproduced with a high degree of neatness consistently with economy. The author would have been glad to have inserted the proper diacritical marks throughout the text, but this would have entailed further delay in publishing a work, which, in the endeavour to make it accurate and reliable in more important respects, has already been kept too long in the press. Such marks have, therefore, been sparingly used, except in the Index, which gives the proper marks for every Sanskrit word occurring in the text, and to which reference should be made in case of doubt. The Index also explains the meaning of terms not occurring in the text, such as *Dakshinayana*, *Uttarayana*, *Aparapaksha*, etc.

MADRAS,
25th March 1911. }

L.D.S.

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ADDENDA.

Section 6 of Text and TABLE VI.

Surya Siddhanta Constants for Centuries from 0 Kaliyuga
to 3101 K.Y. (B.C. 3102 to B.C. 1.)

Year B.C.	Kaliyuga.	Commence- ment of Solar Year.		First New Moon in Solar Year.	(C's anomaly at commencement of Solar Year.	Year B.C.	Kaliyuga.	Commence- ment of Solar Year.		First New Moon in Solar Year.	(C's anomaly at commencement of Solar Year.
		Month and date.	Frac- tion of day.					Month and date.	Frac- tion of day.		
3102 B.C.	0	15F	57924	2.17013	4.71797	1501 B.C.	1601	29F	84837	17.13408	20.26802
3101	1	15F	83800	20.80902	11.76692	1401	1701	1M	72402	20.59572	8.74421
3001	101	16F	71365	24.27066	0.24311	1301	1801	2M	59967	24.05736	24.77498
2901	201	17F	58930	27.73230	16.27388	1201	1901	3M	47532	27.51900	13.25117
2801	301	18F	46494	1.68335	4.75007						
						1101	2001	4M	35097	1.45005	1.72736
2701	401	19F	34059	5.12499	20.78084	1001	2101	5M	22662	4.91169	17.75813
2601	501	20F	21624	8.58663	9.25703	901	2201	6M	10226	8.37393	6.23432
2501	601	21F	99189	12.04827	25.28780	801	2301	6M	97791	11.83557	22.26509
2401	701	21F	96754	15.50991	13.76399						
						701	2401	7M	85356	15.29721	10.74128
2301	801	22F	84319	18.97155	2.24018	601	2501	8M	72921	18.75885	26.77205
2201	901	23F	71883	22.43319	18.27095	501	2601	9M	60486	22.22049	15.24824
2101	1001	24F	59448	25.89483	6.74714	401	2701	10M	48051	25.68213	3.72443
2001	1101	25F	47013	29.35647	22.77791						
						301	2801	11M	35615	29.14377	19.75520
1901	1201	26F	34578	3.28752	11.25410	201	2901	12M	23180	3.07482	8.23139
1801	1301	27F	22143	6.74916	27.28487	101	3001	13M	10745	6.53646	24.26216
1701	1401	28F	99708	10.21080	15.76106	1	3101	13M	98310	9.99810	12.73835
1601	1501	28F	97273	13.67244	4.23725						

N.B.—Odd years in centuries B.C. should be converted into positive years before using Table VII. See instructions in N.B. to Table XXII.

It will be seen that the *Solar Year* 0 K.Y. commenced on Feb. 15.57924. If to this be added the *Sodhya* of 2.1707 days we have, Feb. 15.5792 + 2.1707 = Feb. 17.75, or midnight between 17th and 18th Feb. B.C. 3102, which was the moment of commencement of the Era, 0 Kaliyuga, according to Surya Siddhanta. See foot-note on p. (3) of the Text.

TABLE XVII.

Mean Places of Major Planets at Commencement of each Century from
B.C. 1601 to B.C. 1 (K.Y. 1501 to K.Y. 3101.)

B.C.	K.Y.	Mars.	Mercury.	Jupiter.	Venus.	Saturn.
1601	1501	6.3122	73.0963	207.2519	359.5156	320.0274
1501	1601	66.8392	149.1143	1.9965	198.5007	101.9343
1401	1701	127.3662	225.1323	156.7411	37.4858	243.8412
1301	1801	187.8932	301.1503	311.4857	236.4709	25.7481
1201	1901	248.4202	17.1683	106.2303	75.4560	167.6550
1101	2001	308.9472	93.1863	260.9749	274.4411	309.5619
1001	2101	9.4742	169.2043	55.7195	113.4262	91.4688
901	2201	70.0012	245.2223	210.4641	312.4113	233.3757
801	2301	130.5282	321.2403	5.2087	151.3964	15.2826
701	2401	191.0552	37.2583	159.9533	350.3815	157.1895
601	2501	251.5822	113.2763	314.6979	189.3666	299.0964
501	2601	312.1092	189.2943	109.4425	28.3517	81.0033
401	2701	12.6362	265.3123	264.1871	227.3368	222.9102
301	2801	73.1632	341.3303	58.9317	66.3219	4.8171
201	2901	133.6902	57.3483	213.6763	265.3070	146.7240
101	3001	194.2172	133.3663	8.4209	104.2921	288.6309
1	3101	254.7442	209.3843	163.1655	303.2772	70.5378

EXPLANATION.

With the aid of these two tables it is possible to calculate solar dates, tithis and *nakshatras* for any date between B.C. 3102 and B.C. 1 and also any horoscope from B.C. 1601 to B.C. 1. The places of planets' nodes for any of these years can be easily deduced from the places given in Table XVII in the body of the book for the centuries 1 B.C. to A.D. 2000.

It was thought unnecessary to carry the record of the mean places of planets further back than B.C. 1601, first because it is extremely doubtful whether planetary places were noted in India even roughly before that date, and secondly, because any person wishing to ascertain the mean places of planets at an earlier date can easily do so by noting in the above table the increase of mean sidereal longitude of any planet for 100, 200, 300.....etc., years, and deducting this increase from the mean place for B.C. 1601.

We will now present the reader with the working of two interesting problems in B.C. dates: our examples are taken from Dr. Fleet's article "The day on which Buddha died" in the *Journal of the Royal Asiatic Society* for 1909.

I. *The day on which Buddha died* :—B.C. 483, *Karttika Sukla 8*.

			Commencement of Solar year.	First New Moon in Solar year.		Moon's Anom. at commence- ment of Solar Year.
(Contents p. 4)	B.C. 501	March ...	9·60	22·22		15·25
(Table VII, p. 7)	Add for 18 years.		·66	10·66		16·66
	<u>B.C. 483</u>	March ...	<u>10·26</u>	<u>32·88</u>		<u>31·91</u>
				29·53	(Syn. Mon.)	27·55 (1 Anom. month)
				<u>3·35</u>		<u>4·36</u>
						3·35
						7·71 (Moon's Anomaly at First New- moon in Solar year B.C. 483.)

Table VIII (Addition for *Karttika Sukla 8* in a year in which some previous month was *adhika* * is the same as that for *Sukla 8* of the next month *Margasira*).

				214·59	21·71
				<u>217·91</u>	<u>29·42</u>
					27·55 (1 Anom. month)
					<u>1·87</u>
Sun's Equation for 218 days (Eye-Table)	-·13				-·13 (Sun's Equation)
Moon's Equation for 1·74 days (Eye-Table)	-·15				<u>1·74</u>
		Sum -·28		-·28	
				<u>217·66</u>	
Add commencement of Solar year	...	...	... March	10·26	
			..	<u>227·92</u>	

By Table VIII (p. 11), 227 days from 1 March=13 Oct., and·92 day =(by Eye-Table) 22 hours.

∴ On Dr. Fleet's hypothesis, the tithi on which Buddha died ended on 13 Oct. B. C. 483, at 22 hrs. after Sunrise =(according to our reckoning) 4 A.M. on 14th Oct.

II. *Required the day of the Summer Solstice in the year B.C. 483*, (i.e., the commencement of the Buddhist *vassa* in that year.)

The Summer Solstice happens when the sun is at 90° Tropical Longitude. Table XVII—A. gives the Sun's sidereal longitude for every complete day of the Solar year, while the table in Sec. 284, p. (103) of the text gives us the difference between Indian sidereal and true tropical longitude for various epochs A.D. which we can apply, with sign reversed, to epochs B.C. Our epoch B.C. 483 preceded A.D. 520 by just 1003 years.

For 1000 years the movement of the precession is (by the Table in Sec. 284) 16·5 degrees.

∴ 90° Tropical longitude in B.C. 483 corresponded to 90° + 16·5° = 106·5° Sidereal longitude.

By Table XVII—A, after 111 days complete, Sun's sidereal longitude is 107·26° - 1·10° = 106·16°. For the balance ·34 of a degree (106·5° - 106·16° = 34") we may add (by Table XVII—C) ·33 of a day.

∴ In B.C. 483 the sun attained 90° Tropical or 106·5° Sidereal longitude at 111·33 days of the Solar year.

Since the year commenced on March 10·26, we have, as the day of the Summer Solstice, March 10·26 + 111·33 = March 121·59 =(by Table VIII) 29th June. This agrees with Prof. Jacobi's calculation, cited by Dr. Fleet *loc. cit.*

* The first New-moon in Solar year B.C. 483 being at 3·35 days, we learn from Table II, p. 2, that this was a year in which either *Jyeshtha* or *Ashadha* was *Adhika*. In fact *Jyeshtha* was *Adhika*.

**TABLE XI—B. Shortest Interval in Days, Ghatikas and Pala
NAKSHATRAS.**

Order.	Names of Nakshatras.				Order	Ordinarily	Order	Ordinarily	Order	Ordinarily	Order	Ordinarily	Order	Ordinarily
						Vaisakha		Jyeshtha		Ashadha		Sravana		Bhadrapada
						I		II		III		IV		V
						d. g. p.		d. g. p.		d. g. p.		d. g. p.		d. g. p.
27	Revati	...	...	...	...	3 0 59 21	5 0 48 15	7 0 37 9	9 0 26 2	11 0 14 56				
1	Asvini	...	...	...	...	4 2 0 4	6 1 48 58	8 1 37 51	10 1 26 45	12 1 15 39				
2	Bharani	...	...	...	...	5 3 0 47	7 2 49 41	9 2 38 34	11 2 27 28	13 2 16 22				
3	Krittika (Tamil Kirutugai)	...	...	...	...	6 4 1 30	8 3 50 24	10 3 39 17	12 3 28 11	14 3 17 5				
4	Rohini	...	...	...	...	7 5 2 13	9 4 51 7	11 4 40 0	13 4 28 54	15 4 17 48				
5	Mirgasira (Tamil Mirugasirani)	...	...	...	...	8 6 2 56	10 5 51 50	12 5 40 43	14 5 29 37	16 5 18 31				
6	Ardra (Tamil Arudra or Tiruvadirai)	...	...	...	...	9 7 3 39	11 6 52 33	13 6 41 26	15 6 30 20	17 6 19 14				
7	Punarvasu	...	...	...	...	10 8 4 22	12 7 53 16	14 7 42 9	16 7 31 3	18 7 19 57				
8	Pushya (Tamil Pusam)	...	...	...	...	11 9 5 4	13 8 53 59	15 8 42 52	17 8 31 46	19 8 20 40				
9	Aslesha (Tamil Ayilyam)	...	...	...	...	12 10 5 47	14 9 54 42	16 9 43 35	18 9 32 29	20 9 21 23				
10	Magha (Tamil Magham)	...	...	...	...	13 11 6 30	15 10 55 25	17 10 44 18	19 10 33 12	21 10 22 6				
11	Purva Phalguni (Tamil Puram)	...	...	...	...	14 12 7 13	16 11 56 8	18 11 45 1	20 11 33 55	22 11 22 49				
12	Uttara Phalguni (Tamil Uttiram)	...	...	...	...	15 13 7 56	17 12 56 51	19 12 45 44	21 12 34 38	23 12 23 32				
13	Hasta (Tamil Hastam)	...	...	...	...	16 14 8 39	18 13 57 34	20 13 46 27	22 13 35 21	24 13 24 14				
14	Chitra (Tamil Chittirai)	...	...	...	...	17 15 9 22	19 14 58 17	21 14 47 10	23 14 36 4	25 14 24 58				
15	Svati	...	...	...	...	18 16 10 5	20 15 59 0	22 15 47 53	24 15 36 47	26 15 25 41				
16	Visakha (Tamil Visakam)	...	...	...	...	19 17 10 47	21 16 59 43	23 16 48 36	25 16 37 30	27 16 26 24				
17	Anuradha (Tamil Anusham)	...	...	...	...	20 18 11 30	22 18 0 26	24 17 49 19	26 17 30 13	1 17 27 7				
18	Jyeshtha (Tamil Kettai)	...	...	...	...	21 19 12 13	23 19 1 9	25 18 50 2	27 18 38 56	2 18 27 50				
19	Mula (Tamil Mulam)	...	...	...	...	22 20 12 56	24 20 1 52	26 19 50 45	1 19 39 39	3 19 28 33				
20	Purva Ashadha (Tamil Puradam)	...	...	...	...	23 21 13 39	25 21 2 35	27 20 51 28	2 20 40 22	4 20 29 16				
21	Uttara Ashadha (Tamil Uttiradam)	...	...	...	...	24 22 14 22	26 22 3 18	1 21 52 11	3 21 41 5	5 21 29 59				
22	Sravana (Tamil Tiruvonam)	...	...	...	...	25 23 15 5	27 23 4 1	2 22 52 54	4 22 41 48	6 22 30 42				
23	Sravishta or Danishta (Tamil Avittam)	...	...	...	...	26 24 15 48	1 24 4 44	3 23 53 37	5 23 42 31	7 23 31 25				
24	Satabhisaj or Sataraka (Tamil Sadayam)	...	...	...	...	27 25 16 30	2 25 5 27	4 24 54 20	6 24 43 14	8 24 32 8				
25	Purva Bhadrapada (Tamil Purattadi)	...	...	...	...	1 26 17 14	3 26 6 10	5 25 55 3	7 25 43 57	9 25 32 51				
26	Uttara Bhadrapada (Tamil Uttirattadi)	...	...	...	...	2 27 17 57	4 27 6 53	6 26 55 46	8 26 44 40	10 26 33 34				
27	Revati	...	...	...	...	3 28 18 40	5 28 7 36	7 27 56 29	9 27 45 23	11 27 34 17				
		...	...	...	...	4 29 19 23	6 29 8 19	8 28 57 12	10 28 46 6	12 28 35 0				

Names of Yogas.

YOGAS.

27	Vaidhriti	...	...	...	...	5 0 53 57	9 0 33 17	13 0 12 37	18 0 48 26	22 0 27 46				
1	Vishkamba	...	...	...	...	6 1 50 26	10 1 29 46	14 1 9 6	19 1 44 56	23 1 24 16				
2	Priti	...	...	...	...	7 2 46 55	11 2 26 16	15 2 5 35	20 2 41 25	24 2 20 45				
3	Ayushmat	...	...	...	...	8 3 43 25	12 3 22 45	16 3 2 5	21 3 37 54	25 3 17 15				
4	Saubhagya	...	...	...	...	9 4 39 54	13 4 19 14	17 3 58 34	22 4 34 24	26 4 13 44				
5	Sobhana	...	...	...	...	10 5 36 23	14 5 15 43	18 4 55 4	23 5 30 53	27 5 10 14				
6	Atiganda	...	...	...	...	11 6 32 53	15 6 12 13	19 5 51 33	24 6 27 23	1 6 6 43				
7	Sukarman	...	...	...	...	12 7 29 22	16 7 8 42	20 6 48 2	25 7 23 52	2 7 3 13				
8	Dhriti	...	...	...	...	13 8 25 51	17 8 5 12	21 7 44 32	26 8 20 21	3 7 59 41				
9	Sula	...	...	...	...	14 9 22 21	18 9 1 41	22 8 41 1	27 9 16 50	4 8 56 12				
10	Ganda	...	...	...	...	15 10 18 50	19 9 58 10	23 9 37 31	1 10 13 20	5 9 52 40				
11	Vridhhi	...	...	...	...	16 11 15 20	20 10 54 40	24 10 34 0	2 11 9 49	6 10 49 10				
12	Dhruva	...	...	...	...	17 12 11 49	21 11 51 9	25 11 30 29	3 12 6 19	7 11 45 39				
13	Vyaghata	...	...	...	...	18 13 8 18	22 12 47 38	26 12 26 58	4 13 2 48	8 12 42 9				
14	Harshana	...	...	...	...	19 14 4 48	23 13 44 8	27 13 23 28	5 13 59 17	9 13 38 38				
15	Vajra	...	...	...	...	20 15 1 17	24 14 40 36	1 14 19 57	6 14 55 47	10 14 35 8				
16	Siddhi	...	...	...	...	21 15 57 46	25 15 37 6	2 15 16 27	7 15 52 16	11 15 31 36				
17	Vyatipata	...	...	...	...	22 16 54 16	26 16 33 35	3 16 12 56	8 16 48 46	12 16 28 7				
18	Variyas	...	...	...	...	23 17 50 45	27 17 30 5	4 17 9 25	9 17 45 15	13 17 24 35				
19	Parigha	...	...	...	...	24 18 47 15	1 18 26 34	5 18 5 55	10 18 41 44	14 18 21 5				
20	Siva	...	...	...	...	25 19 43 44	2 19 23 4	6 19 2 24	11 19 38 13	15 19 17 34				
21	Siddha	...	...	...	...	26 20 40 13	3 20 19 33	7 19 58 53	12 20 34 43	16 20 14 4				
22	Sadhya	...	...	...	...	27 21 36 43	4 21 16 3	8 20 55 22	13 21 31 12	17 21 10 32				
23	Subha	...	...	...	...	1 22 33 12	5 22 12 31	9 21 51 52	14 22 27 42	18 22 7 3				
24	Sukla	...	...	...	...	2 23 29 41	6 23 9 1	10 22 48 21	15 23 24 11	19 23 3 31				
25	Brahman	...	...	...	...	3 24 26 11	7 24 5 30	11 23 44 51	16 24 20 40	20 24 0 2				
26	Indra	...	...	...	...	4 25 22 40	8 25 2 0	12 24 41 20	17 25 17 10	21 24 56 30				
27	Vaidhriti	...	...	...	...	5 26 19 9	9 25 58 29	13 25 37 50	18 26 13 39	22 25 52 59				
		...	...	...	...	6 27 15 39	10 26 54 59	14 26 34 19	19 27 10 8	23 26 49 29				
		...	...	...	...	7 28 12 8	11 27 51 28	15 27 30 48	20 28 6 38	24 27 45 58				
		...	...	...	...	8 29 8 37	12 28 47 58	16 28 27 18	21 29 3 7	25 28 42 27				
		...	...	...	...			17 29 23 47						

From New Moon to ending Moment of each Nakshatra and Yoga.

NAKSHATRAS.

Ordinarily Asvina	Order	Ordinarily Kartika	Order	Ordinarily Margasira	Order	Ordinarily Pausha	Order	Ordinarily Magha	Order	Ordinarily Phalguna	Order	Chaitra, when no Adhika Masa.	Order	Chaitra when there is Adhika Masa.
VI		VII		VIII		IX		X		XI		XII		XIII
d. g. p.		d. g. p.		d. g. p.		d. g. p.		d. g. p.		d. g. p.		d. g. p.		d. g. p.
3 0 3 50	16	6 53 26	18	0 42 20	20	0 31 14	22	0 20 8	24	0 9 1	27	0 58 38	2	0 47 31
4 1 4 33	17	1 54 9	19	1 43 3	21	1 31 57	23	1 20 50	25	1 9 44	1	1 59 21	3	1 48 14
5 2 5 16	18	2 54 52	20	2 43 46	22	2 32 40	24	2 21 34	26	2 10 27	2	3 0 3	4	2 48 57
6 3 5 59	19	3 55 35	21	3 44 29	23	3 33 22	25	3 22 16	27	3 11 10	3	4 0 46	5	3 49 40
7 4 6 42	20	4 56 18	22	4 45 12	24	4 34 5	26	4 22 59	1	4 11 53	4	5 1 29	6	4 50 23
8 5 7 25	21	5 57 1	23	5 45 54	25	5 34 48	27	5 23 42	2	5 12 35	5	6 2 12	7	5 51 6
9 6 8 8	22	6 57 44	24	6 46 37	26	6 35 31	1	6 24 25	3	6 13 19	6	7 2 55	8	6 51 49
10 7 8 51	23	7 58 27	25	7 47 20	27	7 36 14	2	7 25 8	4	7 14 1	7	8 3 38	9	7 52 32
21 8 9 34	24	8 59 10	26	8 48 3	1	8 37 57	3	8 25 50	5	8 14 44	8	9 4 21	10	8 53 14
22 9 10 16	25	9 59 53	27	9 48 46	2	9 38 40	4	9 26 34	6	9 15 27	9	10 5 3	11	9 53 57
23 10 10 59	26	11 0 36	1	10 49 29	3	10 39 22	5	10 27 16	7	10 16 10	10	11 5 46	12	10 54 40
24 11 11 42	27	12 1 18	2	11 50 12	4	11 40 5	6	11 27 59	8	11 16 53	11	12 6 29	13	11 55 23
25 12 12 25	1	13 2 1	3	12 50 54	5	12 40 48	7	12 28 42	9	12 17 35	12	13 7 12	14	12 56 6
26 13 13 8	2	14 2 44	4	13 51 37	6	13 41 31	8	13 28 25	10	13 18 19	13	14 7 55	15	13 56 49
27 14 13 51	3	15 3 27	5	14 52 20	7	14 42 14	9	14 29 8	11	14 19 1	14	15 8 38	16	14 57 32
1 15 14 34	4	16 4 10	6	15 53 3	8	15 42 57	10	15 29 50	12	15 19 44	15	16 9 21	17	15 58 14
2 16 15 16	5	17 4 53	7	16 53 46	9	16 43 40	11	16 30 34	13	16 20 27	16	17 10 3	18	16 58 57
3 17 15 59	6	18 5 36	8	17 54 29	10	17 44 22	12	17 31 16	14	17 21 10	17	18 11 46	19	17 59 40
4 18 16 42	7	19 6 18	9	18 55 12	11	18 45 5	13	18 31 59	15	18 22 53	18	19 12 29	20	19 0 23
5 19 17 25	8	20 7 1	10	19 55 54	12	19 45 48	14	19 32 42	16	19 23 35	19	20 13 12	21	20 1 6
6 20 18 8	9	21 7 44	11	20 56 37	13	20 46 31	15	20 33 25	17	20 24 19	20	21 13 55	22	21 1 49
7 21 18 51	10	22 8 27	12	21 57 20	14	21 47 14	16	21 34 8	18	21 25 1	21	22 14 38	23	22 2 32
8 22 19 34	11	23 9 10	13	22 58 3	15	22 47 57	17	22 34 50	19	22 25 44	22	23 15 21	24	23 3 14
9 23 20 16	12	24 9 53	14	23 58 46	16	23 48 40	18	23 35 34	20	23 26 27	23	24 16 3	25	24 3 57
10 24 20 59	13	25 10 36	15	24 59 29	17	24 49 22	19	24 36 16	21	24 27 10	24	25 16 46	26	25 4 40
11 25 21 42	14	26 11 18	16	26 0 12	18	25 50 5	20	25 36 59	22	25 27 53	25	26 17 29	27	26 5 23
12 26 22 25	15	27 12 1	17	27 0 54	19	26 50 48	21	26 37 42	23	26 28 35	26	27 18 12	1	27 6 6
13 27 23 8	16	28 12 44	18	28 1 37	20	27 51 31	22	27 38 25	24	27 29 19	27	28 18 55	2	28 6 49
14 28 23 51	17	29 13 27	19	29 2 20	21	28 52 14	23	28 39 8	25	28 30 1	1	29 19 38	3	29 7 32
15 29 24 34									26	29 30 44				

YOGAS.

26 0 7 6	4	0 42 56	8	0 22 16	12	0 1 36	17	0 37 26	21	0 16 46	26	0 52 35	3	0 31 75
27 1 3 36	5	1 39 25	9	1 18 46	13	0 58 6	18	1 33 55	22	1 13 15	27	1 49 5	4	1 28 25
1 2 0 5	6	2 35 55	10	2 15 15	14	1 54 35	19	2 30 24	23	2 9 45	1	2 45 34	5	2 24 54
2 2 56 35	7	3 32 24	11	3 11 44	15	2 51 5	20	3 26 54	24	3 6 14	2	3 42 3	6	3 21 24
3 3 53 4	8	4 28 54	12	4 8 14	16	3 47 34	21	4 23 23	25	4 2 43	3	4 38 33	7	4 17 53
4 4 49 33	9	5 25 23	13	5 4 43	17	4 44 3	22	5 19 53	26	4 59 13	4	5 35 2	8	5 14 22
5 5 46 3	10	6 21 52	14	6 1 12	18	5 40 32	23	6 16 22	27	5 55 42	5	6 31 32	9	6 10 52
6 6 42 32	11	7 18 21	15	6 57 42	19	6 37 2	24	7 12 51	1	6 52 12	6	7 28 1	10	7 7 21
7 7 39 1	12	8 14 51	18	7 54 11	20	7 33 31	25	8 9 21	2	7 48 41	7	8 24 0	11	8 3 50
8 8 35 31	13	9 11 20	17	8 50 40	21	8 30 1	26	9 5 50	3	8 45 10	8	9 20 58	12	9 0 20
9 9 32 0	14	10 7 50	18	9 47 10	22	9 26 30	27	10 2 20	4	9 41 39	9	10 17 29	13	9 56 49
10 10 28 30	15	11 4 19	19	10 43 39	23	10 22 59	1	10 58 49	5	10 38 9	10	11 13 57	14	10 53 18
11 11 24 59	16	12 0 48	20	11 40 9	24	11 19 29	2	11 55 18	6	11 34 38	11	12 10 28	15	11 49 48
12 12 21 28	17	12 57 18	21	12 36 38	25	12 15 58	3	12 51 47	7	12 31 8	12	13 6 56	16	12 46 17
13 13 17 58	18	13 53 47	22	13 33 7	26	13 12 27	4	13 48 17	8	13 27 37	13	14 3 27	17	13 42 47
14 14 14 27	19	14 50 16	23	14 29 36	27	14 8 57	5	14 44 46	9	14 24 6	14	14 59 55	18	14 39 16
15 15 10 57	20	15 46 46	24	15 26 6	1	15 5 26	6	15 41 16	10	15 20 36	15	15 56 25	19	15 35 45
16 16 7 25	21	16 43 15	25	16 22 35	2	16 1 55	7	16 37 45	11	16 17 5	16	16 52 53	20	16 32 15
17 17 3 55	22	17 39 45	26	17 19 5	3	16 58 25	8	17 34 14	12	17 13 35	17	17 49 24	21	17 28 44
18 18 0 24	23	18 36 14	27	18 15 34	4	17 54 54	9	18 30 44	13	18 10 4	18	18 45 52	22	18 25 13
19 18 56 54	24	19 32 43	1	19 12 3	5	18 51 24	10	19 27 13	14	19 6 33	19	19 42 23	23	19 21 43
20 19 53 23	25	20 29 13	2	20 8 33	6	19 47 53	11	20 23 42	15	20 3 2	20	20 38 51	24	20 18 12
21 20 49 53	26	21 25 42	3	21 5 2	7	20 44 22	12	21 20 12	16	20 59 32	21	21 35 22	25	21 14 42
22 21 46 22	27	22 22 12	4	22 1 32	8	21 40 51	13	22 16 41	17	21 56 1	22	22 31 50	26	22 11 11
23 22 42 51	1	23 18 41	5	22 58 1	9	22 37 21	14	23 13 10	18	22 52 31	23	23 28 20	27	23 7 40
24 23 39 21	2	24 15 10	6	23 54 30	10	23 33 50	15	24 9 40	19	23 49 0	24	24 24 49	1	24 4 10
25 24 35 50	3	25 11 40	7	24 51 0	11	24 30 20	16	25 6 9	20	24 45 29	25	25 21 19	2	25 0 39
26 25 32 19	4	26 8 9	8	25 47 29	12	25 26 49	17	26 2 38	21	25 41 59	26	26 17 48	3	25 57 9
27 26 28 48	5	27 4 38	9	26 43 58	13	26 23 18	18	26 59 8	22	26 38 28	27	27 14 18	4	26 53 38
1 27 25 18	6	28 1 7	10	27 40 28	14	27 19 48	19	27 55 37	23	27 34 57	1	28 10 47	5	27 50 8
2 28 21 47	7	28 57 37	11	28 36 57	15	28 16 17	20	28 52 7	24	28 31 27	2	29 7 16	6	28 46 37
3 29 18 17					16	29 12 47			25	29 27 56				

TABLE XI-C. Annual Correction (additive) for Nakshatras and Yogas A.D. 1840-A.D. 1920.

Nakshatras.							Yogas.							Nakshatras.							Yogas.							Nakshatras.							Yogas.						
A. D.	d.	gh.	p.	d.	gh.	p.	A. D.	d.	gh.	p.	d.	gh.	p.	A. D.	d.	gh.	p.	d.	gh.	p.	A. D.	d.	gh.	p.	d.	gh.	p.	A. D.	d.	gh.	p.	d.	gh.	p.	A. D.	d.	gh.	p.	d.	gh.	p.
1840	0	40	22	1	15	7	1860	1	30	16	2	47	59	1880	0	7	38	0	14	14	1900	0	57	33	1	47	6	1900	0	57	33	1	47	6	1900	0	57	33	1	47	6
1841	1	29	15	2	46	5	1861	0	6	37	0	12	19	1881	0	56	32	1	45	11	1901	1	46	26	3	18	3	1901	1	46	26	3	18	3	1901	1	46	26	3	18	3
1842	0	11	35	0	10	25	1862	0	55	30	1	43	17	1882	1	45	24	3	16	9	1902	0	22	46	0	42	24	1902	0	22	46	0	42	24	1902	0	22	46	0	42	24
1843	0	54	28	1	41	23	1863	1	44	23	3	14	15	1883	0	21	45	0	40	29	1903	1	11	39	2	13	21	1903	1	11	39	2	13	21	1903	1	11	39	2	13	21
1844	1	43	21	3	12	20	1864	0	20	44	0	38	35	1884	1	10	38	2	11	27	1904	2	0	32	3	44	19	1904	2	0	32	3	44	19	1904	2	0	32	3	44	19
1845	0	19	42	0	36	41	1865	1	9	37	2	9	31	1885	1	59	31	3	42	24	1905	0	36	53	1	8	39	1905	0	36	53	1	8	39	1905	0	36	53	1	8	39
1846	1	8	35	2	7	38	1866	1	58	30	3	40	30	1886	0	35	52	1	6	45	1906	1	25	46	2	49	37	1906	1	25	46	2	49	37	1906	1	25	46	2	49	37
1847	1	57	28	3	38	36	1867	0	34	50	1	4	51	1887	1	24	45	2	37	43	1907	0	2	7	0	3	57	1907	0	2	7	0	3	57	1907	0	2	7	0	3	57
1848	0	33	49	1	2	57	1868	1	23	43	2	35	48	1888	0	1	6	0	2	3	1908	0	51	0	1	34	55	1908	0	51	0	1	34	55	1908	0	51	0	1	34	55
1849	1	22	42	2	33	54	1869	0	0	4	0	0	9	1889	0	49	59	1	33	1	1909	1	39	53	3	5	52	1909	1	39	53	3	5	52	1909	1	39	53	3	5	52
1850	2	11	35	4	4	52	1870	0	48	57	1	31	6	1890	1	38	52	3	3	58	1910	0	16	14	0	30	13	1910	0	16	14	0	30	13	1910	0	16	14	0	30	13
1851	0	47	56	1	29	12	1871	1	37	50	3	2	4	1891	0	15	12	0	28	19	1911	1	5	7	2	1	11	1911	1	5	7	2	1	11	1911	1	5	7	2	1	11
1852	1	36	49	3	0	10	1872	0	14	11	0	26	24	1892	1	4	5	1	59	17	1912	1	54	0	3	32	8	1912	1	54	0	3	32	8	1912	1	54	0	3	32	8
1853	0	13	9	0	24	30	1873	1	3	4	1	57	22	1893	1	52	58	3	30	14	1913	0	30	21	0	56	29	1913	0	30	21	0	56	29	1913	0	30	21	0	56	29
1854	1	2	3	1	55	28	1874	1	51	57	3	28	20	1894	0	29	20	0	54	34	1914	1	19	14	2	27	27	1914	1	19	14	2	27	27	1914	1	19	14	2	27	27
1855	1	50	56	3	26	26	1875	0	20	18	0	52	40	1895	1	18	12	2	25	32	1915	2	8	7	3	58	24	1915	2	8	7	3	58	24	1915	2	8	7	3	58	24
1856	0	27	16	0	50	46	1876	1	17	11	2	23	38	1896	2	7	5	3	56	30	1916	0	44	27	1	22	45	1916	0	44	27	1	22	45	1916	0	44	27	1	22	45
1857	2	16	9	2	21	44	1877	2	6	4	3	54	35	1897	0	43	26	1	20	50	1917	1	33	20	2	53	42	1917	1	33	20	2	53	42	1917	1	33	20	2	53	42
1858	2	5	2	3	52	41	1878	1	42	24	1	18	56	1898	1	32	19	2	51	48	1918	0	9	41	0	18	3	1918	0	9	41	0	18	3	1918	0	9	41	0	18	3
1859	0	40	23	1	16	47	1879	1	31	18	2	49	54	1899	0	8	40	0	16	8	1919	0	58	34	1	49	0	1919	0	58	34	1	49	0	1919	0	58	34	1	49	0

EXPLANATION.

In the *N.B.* to Sec. 263, p. (95) of the text additive tables for Nakshatras were promised with the next edition. The convenience of having additive formulæ for the current epoch A.D. 1840 to A.D. 1920 is so great that the necessary tables are presented to the reader in the above addenda as Tables XI—B. and XI—C. Examples will now be given, showing how these tables should be used.

I. Required the ending moment of Nakshatra Krittika for the month of July 1910 (vide p. 232 of Tables).

	d.	gh.	p.	☾'s Anom.			
	d.	gh.	p.	d.	gh.	p.	
(Table XII, p. 15) Jyeshtha New Moon.	June	7	39	7	2	30	40
(Table XI—B, previous page) Shortest interval from Jyeshtha		26	6	10	26	6	10
New Moon to No. 3 Krittika Nakshatra.		0	16	14	0	16	14
Add Nakshatra correction for 1910 (XI—C. <i>Supra</i> .)		<hr/>			<hr/>		
	June	34	1	31	28	53	4
		<hr/>			<hr/>		
		d.	gh.	p.			
(Table IX-1, p. 23.) Nakshatra Eqn. for Anom. of ☾		1	19	47			
		—	6	20	27	33	17 (1 Anom. Month.)
		<hr/>			<hr/>		
	June	33	55	11	1	19	47

Krittika Nakshatra ended on June 33, *i.e.*, on 3 July 1910, at 55 ghatikas 11 palas after mean Lanka Sunrise. If we want local time, we should use Table XIII.

II. Required the ending moment of Yoga Vyatipata (No. 17) in July 1910.

(Table XII, p. 151.) Ashadha New Moon.	July	d.	gh.	p.	☉'s Anom. d.	gh.	p.	☾'s Anom. d.	gh.	p.
(Table XI -B, previous page) Shortest interval from Ashadha New Moon to No. 17 Vyatipata Yoga.		7	10	57	84	58	29	4	29	13
(XI—C. <i>Supra</i>) Add Yoga correction for A. D. 1910.		3	58	34	3	58	34	3	58	34
		0	30	13	0	30	13	0	30	13
(Table IX-1, p. 20a) Sun's Yoga Eqn. for 89 d. 27 gh. + 1 gh. 25 p.		11	39	44	89	27	16	8	58	0
„ p. 20b, Moon's Yoga Eqn. for 8 d. 59 gh. 25 p. - 19 gh. 40 p.										
Sum - 18 gh. 15 p.		-	18	15	(☉'s Yoga Eqn.)	+	1	25		
	July	11	21	29				8	59	25

i. e., No. 17 Yoga Vyatipata ended at 21 gh. 29 p. after mean Lanka Sunrise on 11 July 1910.

Addendum. TABLES XI-D and XI-E. Shortest Interval in days and decimals of a day from new moon to ending moment of each Nakshatra and each Yoga.

EXPLANATION.

Tables XI-D and XI-E, which are printed on the next two pages, are the additive tables promised in N.B. to S. 263, p. (95) of the Text. One of the intervals in Table XI-D, as well as the result of the application of Table XI-E, should be *added* to the moment of new moon in order to ascertain the ending moment of any *nakshatra* or *yoga*. Though the tables are, as a whole, additive, it should be remembered that in using Table XI-E, the correction corresponding to the decimal portion of the argument should be *subtracted* from the correction corresponding to the integral number of days after which the first new moon appears in each solar year. Where great accuracy is not essential, it is unnecessary to calculate the correction corresponding to the decimal portion of the argument. The argument for Table XI-E is always the day of the First New Moon in the Solar Year. When the First New Moon is less than a day old in the Solar Year, prefix 0 to the argument. Thus, for A.D. 1915 (First New Moon in Solar Year, 0.9855) the Nakshatra correction is $2.2089 - (.0733 + .0004) = 2.1352$; and the Yoga correction is $4.11036 - (.13641 + .00076) = 4.07319$.

EXAMPLES.

The examples on the previous page will first be worked out with the aid of Tables XI-D and XI-E on the next two pages.

I.—Required the ending moment of Nakshatra Kritika for the month of July 1910. (see Tables, p. 232.)

	Month.	Day.	Fraction of day.	☾'s Anom. days.
(Table X, p. 126) Jyeshtha New Moon, A.D. 1910	...	June	7	.65
				0.535
				+ 1.976
(Table XI-D, next page). Shortest interval from Jyeshtha New Moon to No. 3. Kritika Nakshatra	...	+ 26	.10	+ 26.10
				28.61
				- 27.55 (1 Anom. Month.)
				1.06

(Table XI-E). The first New Moon in the Solar Year being, according to Table X, at 25.91 days, this is the argument for Table XI-E (next page). The Nakshatra correction for A.D. 1910-11 is, therefore by Table XI-E, 0.34 minus .07 =

...	...	...	...	+	.27	+	.27
Table (IX-j). Nakshatra equation corresponding to ☾'s Anom. of 1.33 days	...	...	...	June	34	.02	1.33
						-.11	
				June	33	.91	

i.e., (by Eye-table) the Nakshatra Kritika in July 1910 ended on June 33, that is, on 3 July, at 55 ghatikas after mean sunrise.

II.—Required the ending moment of Yoga Vyatipata (No. 17) in July 1910. (see Tables, p. 232.)

	days	☉'s Anom. days.	☾'s Anom. days.
(Table X, p. 126.) Ashadha New Moon, A.D. 1910.	July 7.18	25.91	0.53
		+59.06	+3.95
(Table XI-D next page). Shortest interval from Ashadha New Moon to No. 17 Vyatipata Yoga	+ 3.98	+ 3.98	+ 3.98
(Table XI-E). Applying, as before, the argument for A.D. 1910-11, <i>i.e.</i> , 25.91 to the Yoga correction table in XI-E, we have 0.63 minus .13 =	+ .50	+ .50	+ .50
	July 11.66	89.45	8.96
	= July 11, 39½ gh.	or 89d. 27gh.	or 8 days 57½ gh.
Table IX-(i): ☉'s Yoga equation for 89d. 27 gh. = +1½ gh.			+1½ gh. [☉'s
Table IX-(i): ☾'s Yoga equation for 8d. 59 gh. = -19½ gh.			yoga equation by
	-18½ gh.	-18½ gh.	Table IX-(i)]
			8 days, 59 gh.

Ending moment of No. 17 Vyatipata Yoga, July 11, 21½ gh. after mean (Lanka) sunrise.

N. B.—The difference between this result and that arrived at on the last page is due to the fact that in the present working we have used only two decimal places for mean ending moments and anomalies.

We see that the method is applicable to Nakshtras and Yogas in any year, B.C. or A.D., not merely in the years A.D. 1840-A.D. 1920, as in Tables XI-B and XI-C on the three previous pages.

Continued on page 12.

Addendum.

TABLE XI—D. Shortest Interval in Days, from New-Moon to end

NAKSHATRAS.

Order	Names of Nakshatras.	Order Ordinarily Vaisakha	Order Ordinarily Jyeshtha	Order Ordinarily Ashadha	Order Ordinarily Sravana	Order Ordinarily Bhadrapada	Order Ordinarily Ashvina	Order Ordinarily Karttika	Order Ordinarily Margasirsha
		I	II	III	IV	V	VI	VII	VIII
27	Revati ...	3 0.9892	5 0.8041	7 0.6190	9 0.4339	11 0.2488	13 0.0638	15 0.8906	17 0.7055
1	Asvini ...	4 2.0011	6 1.8160	8 1.6309	10 1.4458	12 1.2608	14 1.0757	16 1.9025	18 1.7174
2	Bharani ...	5 3.0130	7 2.8279	9 2.6428	11 2.4578	13 2.2727	15 2.0876	17 2.9144	19 2.7293
3	Krittika ...	6 4.0249	8 3.8398	10 3.6548	12 3.4697	14 3.2846	16 3.0995	18 3.9263	20 3.7412
4	Rohini ...	7 5.0368	9 4.8518	11 4.6667	13 4.4816	15 4.2965	17 4.1114	19 4.9382	21 4.7531
5	Mirgasira ...	8 6.0488	10 5.8637	12 5.6786	14 5.4935	16 5.3084	18 5.1233	20 5.9502	22 5.7651
6	Ardra ...	9 7.0607	11 6.8756	13 6.6905	15 6.5054	17 6.3203	19 6.1352	21 6.9621	23 6.7770
7	Punarvasu ...	10 8.0726	12 7.8875	14 7.7024	16 7.5173	18 7.3322	20 7.1472	22 7.9740	24 7.7889
8	Pushya ...	11 9.0845	13 8.8994	15 8.7143	17 8.5292	19 8.3442	21 8.1591	23 8.9859	25 8.8008
9	Aslesha ...	12 10.0964	14 9.9113	16 9.7262	18 9.5412	20 9.3561	22 9.1710	24 9.9978	26 9.8127
0	Magha ...	13 11.1083	15 10.9232	17 10.7382	19 10.5531	21 10.3680	23 10.1829	25 11.0097	27 10.8246
11	Purva Phalguni ...	14 12.1202	16 11.9352	18 11.7501	20 11.5650	22 11.3799	24 11.1948	26 12.0216	28 11.8365
12	Uttara Phalguni ...	15 13.1322	17 12.9471	19 12.7620	21 12.5769	23 12.3918	25 12.2067	27 13.0336	29 12.8485
13	Hasta ...	16 14.1441	18 13.9590	20 13.7739	22 13.5888	24 13.4037	26 13.2186	28 14.0455	30 13.8604
14	Chitra ...	17 15.1560	19 14.9709	21 14.7858	23 14.6007	25 14.4156	27 14.2306	29 15.0574	31 14.8723
15	Svati ...	18 16.1679	20 15.9828	22 15.7977	24 15.6126	26 15.4276	28 15.2425	30 16.0693	32 15.8842
16	Visakha ...	19 17.1798	21 16.9947	23 16.8096	25 16.6246	27 16.4395	29 16.2544	31 17.0812	33 16.8961
17	Anuradha ...	20 18.1917	22 18.0066	24 17.8216	26 17.6365	28 17.4514	30 17.2663	32 18.0931	34 17.9080
18	Jyeshtha ...	21 19.2036	23 19.0186	25 18.8335	27 18.6484	29 18.4633	31 18.2782	33 19.1050	35 18.9199
19	Mula ...	22 20.2156	24 20.0305	26 19.8454	28 19.6603	30 19.4752	32 19.2901	34 20.1169	36 19.9318
20	Purva Ashadha ...	23 21.2275	25 21.0424	27 20.8573	29 20.6722	31 20.4871	33 20.3020	35 21.1289	37 20.9438
21	Uttara Ashadha ...	24 22.2394	26 22.0543	28 21.8692	30 21.6841	32 21.4990	34 21.3139	36 22.1408	38 21.9557
22	Sravana ...	25 23.2513	27 23.0662	29 22.8811	31 22.6960	33 22.5109	35 22.3259	37 23.1527	39 22.9676
23	Sravishta ...	26 24.2632	28 24.0781	30 23.8930	32 23.7079	34 23.5229	36 23.3378	38 24.1646	40 23.9795
24	Satabhisaj ...	27 25.2751	29 25.0900	31 24.9049	33 24.7199	35 24.5348	37 24.3497	39 25.1765	41 24.9914
25	Purva Bhadrapada ...	1 26.2870	3 26.1019	5 25.9169	7 25.7318	9 25.5467	11 25.3616	13 26.1884	15 26.0033
26	Uttara Bhadrapada ...	2 27.2990	4 27.1139	6 26.9288	8 26.7437	10 26.5586	12 26.3735	14 27.2003	16 27.0152
27	Revati ...	3 28.3109	5 28.1258	7 27.9407	9 27.7556	11 27.5705	13 27.3854	15 28.2123	17 28.0272
		4 29.3228	6 29.1377	8 28.9526	10 28.7675	12 28.5824	14 28.3973	16 29.2242	18 29.0391
							15 29.4093		

Names of Yogas.

YOGAS.

27	Vaidhriti ...	5 0.8992	9 0.5548	13 0.2104	17 0.8075	21 0.4631	25 0.1187	29 0.7157	33 0.3713
1	Vishkamba ...	6 1.8407	10 1.4963	14 1.1519	18 1.7490	22 1.4046	26 1.0601	30 1.6572	34 1.3128
2	Priti ...	7 2.7822	11 2.4378	15 2.0934	19 2.6905	23 2.3460	27 2.0016	31 2.5987	35 2.2543
3	Ayushmat ...	8 3.7237	12 3.3793	16 3.0349	20 3.6319	24 3.2875	28 2.9431	32 3.5402	36 3.1958
4	Saubhagya ...	9 4.6652	13 4.3208	17 3.9763	21 4.5734	25 4.2290	29 3.8846	33 4.4817	37 4.1373
5	Sobhana ...	10 5.6067	14 5.2622	18 4.9178	22 5.5149	26 5.1705	30 4.8261	34 5.4232	38 5.0788
6	Atiganda ...	11 6.5482	15 6.2037	19 5.8593	23 6.4564	27 6.1120	31 5.7676	35 6.3647	39 6.0203
7	Sukarman ...	12 7.4896	16 7.1452	20 6.8008	24 7.3979	28 7.0535	32 6.7091	36 7.3062	40 6.9617
8	Dhriti ...	13 8.4311	17 8.0867	21 7.7423	25 8.3394	29 7.9950	33 7.6506	37 8.2477	41 7.9032
9	Sula ...	14 9.3726	18 9.0282	22 8.6838	26 9.2809	30 8.9365	34 8.5921	38 9.1891	42 8.8446
10	Ganda ...	15 10.3141	19 9.9697	23 9.6253	27 10.2224	31 9.8780	35 9.5335	39 10.1306	43 9.7862
11	Vridhhi ...	16 11.2556	20 10.9112	24 10.5668	28 11.1639	32 10.8195	36 10.4750	40 11.0721	44 10.7277
12	Dhruva ...	17 12.1971	21 11.8527	25 11.5083	29 12.1053	33 11.7609	37 11.4165	41 12.0136	45 11.6693
13	Vyaghata ...	18 13.1386	22 12.7942	26 12.4498	30 13.0468	34 12.7024	38 12.3580	42 12.9551	46 12.6107
14	Harshana ...	19 14.0801	23 13.7357	27 13.3912	31 13.9883	35 13.6439	39 13.2995	43 13.9966	47 13.6522
15	Vajra ...	20 15.0216	24 14.6771	28 14.3327	32 14.9298	36 14.5854	40 14.2410	44 14.8381	48 14.4937
16	Siddhi ...	21 15.9630	25 15.6186	29 15.2742	33 15.8713	37 15.5269	41 15.1825	45 15.7796	49 15.4352
17	Vyatipata ...	22 16.9045	26 16.5601	30 16.2157	34 16.8128	38 16.4684	42 16.1240	46 16.7211	50 16.3767
18	Variyas ...	23 17.8460	27 17.5016	31 17.1572	35 17.7543	39 17.4099	43 17.0655	47 17.6626	51 17.3182
19	Parigha ...	24 18.7875	28 18.4431	32 18.0987	36 18.6958	40 18.3514	44 18.0070	48 18.6040	52 18.2596
20	Siva ...	25 19.7290	29 19.3846	33 19.0402	37 19.6373	41 19.2929	45 18.9484	49 19.5455	53 19.2011
21	Siddha ...	26 20.6705	30 20.3261	34 19.9817	38 20.5788	42 20.2343	46 19.8899	50 20.4870	54 20.1426
22	Sadhya ...	27 21.6120	31 21.2676	35 20.9232	39 21.5202	43 21.1758	47 20.8314	51 21.4285	55 21.0841
23	Subha ...	1 22.5535	5 22.2091	39 21.8647	43 22.4617	47 22.1173	51 21.7729	55 22.3700	59 22.0256
24	Sukla ...	2 23.4950	6 23.1506	40 22.8061	44 23.4032	48 23.0588	52 22.7144	56 23.3115	60 22.9671
25	Brahman ...	3 24.4365	7 24.0920	41 23.7476	45 24.3447	49 24.0003	53 23.6559	57 24.2530	61 23.9087
26	Indra ...	4 25.3779	8 25.0335	42 24.6891	46 25.2862	50 24.9418	54 24.5974	58 25.1945	62 24.8501
27	Vaidhriti ...	5 26.3194	9 25.9750	43 25.6306	47 26.2277	51 25.8833	55 25.5389	59 26.1360	63 25.7916
		6 27.2609	10 26.9165	44 26.5721	48 27.1692	52 26.8248	56 26.4804	60 27.0774	64 26.7332
		7 28.2024	11 27.8580	45 27.5136	49 28.1107	53 27.7663	57 27.4219	61 28.0189	65 27.6748
		8 29.1439	12 28.7995	46 28.4551	50 29.0522	54 28.7078	58 28.3633	62 28.9604	66 28.6160
				47 29.3966			59 29.3048		

oment of each Nakshatra and Yoga.

NAKSHATRAS.

Ordinarily Pausha	Ordinarily Magha	Ordinarily Phalguna	Ordinarily Chaitra, when no Adhika Masa.	Ordinarily Chaitra when there is Adhika Masa.
IX	X	XI	XII	XIII
0-5204 1-5323 2-5442 3-5562 4-5681 5-5800 6-5919 7-6038 8-6157 9-6276	22 23 24 25 26 27 1 2 3 4	0-3353 1-3472 2-3592 3-3711 4-3830 5-3949 6-4068 7-4187 8-4306 9-4426	24 25 26 27 1 2 3 4 5 6	0-1502 1-1622 2-1741 3-1860 4-1979 5-2098 6-2217 7-2336 8-2456 9-2575
10-6396 11-6515 12-6634 13-6753 14-6872 15-6991 16-7110 17-7230 18-7349 19-7468	5 6 7 8 9 10 11 12 13 14	10-4545 11-4664 12-4783 13-4902 14-5021 15-5140 16-5260 17-5379 18-5498 19-5617	7 8 9 10 11 12 13 14 15 16	10-2694 11-2813 12-2932 13-3051 14-3170 15-3290 16-3409 17-3528 18-3647 19-3766
20-7587 21-7706 22-7825 23-7944 24-8064 25-8183 26-8302 27-8421 28-8540	15 16 17 18 19 20 21 22 23	20-3885 21-4004 22-4124 23-4243 24-4362 25-4481 26-4600 27-4719 28-4838	20 21 22 23 24 25 26 27 1	21-2153 22-2273 23-2392 24-2511 25-2630 26-2749 27-2868 28-2987 29-3107
29-3226	2	29-4957	28	29-1256

YOGAS.

0-0269 0-9684 1-9099 2-8514 3-7929 4-7344 5-6759 6-6173 7-5588 8-5003	17 18 19 20 21 22 23 24 25 26	0-6240 1-5655 2-5070 3-4485 4-3900 5-3314 6-2729 7-2144 8-1559 9-0974	21 22 23 24 25 26 27 1 2 3	0-2796 1-2211 2-1626 3-1041 4-0455 5-9870 6-9285 7-8700 8-8115 9-7530	28 27 1 2 3 4 5 6 7 8	0-8767 1-8182 2-7596 3-7011 4-6426 5-5841 6-5256 7-4671 8-4086 9-3501	3 4 5 6 7 8 9 10 11 12	0-5323 1-4737 2-4152 3-3567 4-2982 5-2397 6-1812 7-1227 8-0642 9-0057
9-4418 10-3833 11-3248 12-2663 13-2078 14-1493 15-0907 16-0322 16-9737 17-9152	27 1 2 3 4 5 6 7 8 9	10-0389 10-9804 11-9219 12-8634 13-8048 14-7463 15-6878 16-6293 17-5708 18-5123	4 5 6 7 8 9 10 11 12 13	9-6945 10-6360 11-5775 12-5190 13-4604 14-4019 15-3434 16-2849 17-2264 18-1679	9 10 11 12 13 14 15 16 17 18	10-2916 11-2331 12-1745 13-1160 14-0575 15-9990 16-9405 17-8820 18-8235 19-7650	13 14 15 16 17 18 19 20 21 22	9-9472 10-8886 11-8301 12-7716 13-7131 14-6546 15-5961 16-5376 17-4791 18-4206
18-8567 19-7982 20-7397 21-6812 22-6227 23-5642 24-5056 25-4471 26-3886 27-3301 28-2716 29-2131	10 11 12 13 14 15 16 17 18 19 20 21	19-4538 20-3953 21-3368 22-2783 23-2197 24-1612 25-1027 26-0442 27-9857 28-9272 29-8687	14 15 16 17 18 19 20 21 22 23 24	19-1094 20-0509 21-9924 22-9338 23-8753 24-8168 25-7583 26-6998 27-6413 28-5828 29-5243	19 20 21 22 23 24 25 26 27 28 29	19-7065 20-6479 21-5894 22-5309 23-4724 24-4139 25-3554 26-2969 27-2384 28-1799 29-1214	23 24 25 26 27 28 29 30 31 32	19-3621 20-3035 21-2450 22-1865 23-1280 24-0695 25-0110 26-9525 27-8940 28-8355 29-7769

TABLE XI—E. ANNUAL CORRECTION.

Argument:—Date of appearance of 1st New-Moon in each Solar Year according to Table X.

The correction corresponding to the decimal portion of the argument should be subtracted from the Nakshatra or Yoga correction corresponding to the integral portion; thus the Nakshatra correction corresponding to an argument 28-53=0-11 minus 0-04=0-07.

NAKSHATRAS.

Arg. Corr.	Arg. Corr.	Arg. Corr.	Arg. Corr.	Arg. Corr.
0 2-20890	01 0-00075	30 0-02244	59 0-04413	88 0-06582
1 2-13410	02 0-00150	31 0-02319	60 0-04488	89 0-06657
2 2-05930	03 0-00224	32 0-02394	61 0-04563	90 0-06732
3 1-98450	04 0-00299	33 0-02468	62 0-04638	91 0-06807
4 1-90970	05 0-00374	34 0-02543	63 0-04712	92 0-06882
5 1-83490	06 0-00449	35 0-02618	64 0-04787	93 0-06956
6 1-76010	07 0-00524	36 0-02693	65 0-04862	94 0-07031
7 1-68531	08 0-00598	37 0-02768	66 0-04937	95 0-07106
8 1-61049	09 0-00673	38 0-02842	67 0-05012	96 0-07181
9 1-53569	10 0-00748	39 0-02917	68 0-05086	97 0-07256
10 1-46089	11 0-00823	40 0-02992	69 0-05161	98 0-07330
11 1-38609	12 0-00898	41 0-03067	70 0-05236	99 0-07405
12 1-31129	13 0-00972	42 0-03142	71 0-05311	
13 1-23649	14 0-01047	43 0-03216	72 0-05386	
14 1-16169	15 0-01122	44 0-03291	73 0-05460	
15 1-08689	16 0-01197	45 0-03366	74 0-05535	
16 1-01209	17 0-01272	46 0-03441	75 0-05610	
17 0-93729	18 0-01346	47 0-03516	76 0-05685	
18 0-86249	19 0-01421	48 0-03590	77 0-05760	
19 0-78769	20 0-01496	49 0-03665	78 0-05834	
20 0-71288	21 0-01571	50 0-03740	79 0-05909	
21 0-63808	22 0-01646	51 0-03815	80 0-05984	
22 0-56328	23 0-01720	52 0-03890	81 0-06059	
23 0-48848	24 0-01795	53 0-03964	82 0-06134	
24 0-41368	25 0-01870	54 0-04039	83 0-06208	
25 0-33888	26 0-01945	55 0-04114	84 0-06283	
26 0-26408	27 0-02020	56 0-04189	85 0-06358	
27 0-18928	28 0-02094	57 0-04264	86 0-06433	
28 0-11448	29 0-02169	58 0-04338	87 0-06508	
29 0-03968				

YOGAS.

0 4-11036	01 0-00139	30 0-04176	59 0-08212	88 0-12249
1 3-97117	02 0-00278	31 0-04315	60 0-08351	89 0-12388
2 3-83198	03 0-00417	32 0-04454	61 0-08491	90 0-12527
3 3-69279	04 0-00557	33 0-04593	62 0-08630	91 0-12666
4 3-55360	05 0-00696	34 0-04732	63 0-08769	92 0-12805
5 3-41441	06 0-00835	35 0-04872	64 0-08908	93 0-12945
6 3-27522	07 0-00974	36 0-05011	65 0-09047	94 0-13084
7 3-13603	08 0-01113	37 0-05150	66 0-09186	95 0-13223
8 2-99684	09 0-01253	38 0-05289	67 0-09326	96 0-13362
9 2-85765	10 0-01392	39 0-05428	68 0-09465	97 0-13501
10 2-71846	11 0-01530	40 0-05568	69 0-09604	98 0-13641
11 2-57927	12 0-01670	41 0-05707	70 0-09743	99 0-13780
12 2-44008	13 0-01809	42 0-05846	71 0-09882	
13 2-30089	14 0-01949	43 0-05985	72 0-10022	
14 2-16170	15 0-02088	44 0-06124	73 0-10161	
15 2-02251	16 0-02227	45 0-06263	74 0-10300	
16 1-88332	17 0-02366	46 0-06403	75 0-10439	
17 1-74413	18 0-02505	47 0-06542	76 0-10578	
18 1-60494	19 0-02645	48 0-06681	77 0-10718	
19 1-46575	20 0-02784	49 0-06820	78 0-10857	
20 1-32656	21 0-02923	50 0-06959	79 0-10996	
21 1-18737	22 0-03063	51 0-07098	80 0-11135	
22 1-04818	23 0-03201	52 0-07238	81 0-11274	
23 0-90899	24 0-03340	53 0-07377	82 0-11413	
24 0-76980	25 0-03480	54 0-07516	83 0-11553	
25 0-63061	26 0-03619	55 0-07655	84 0-11692	
26 0-49142	27 0-03758	56 0-07795	85 0-11831	
27 0-35223	28 0-03897	57 0-07934	86 0-11970	
28 0-21304	29 0-04036	58 0-08073	87 0-12109	
29 0-07385				

Addendum. Continued from page 9.

III.—Required the ending moment of No. 17 Anuradha Nakshatra in June 484 A.D. (see Tables, p. 232).

	days.	☾'s Anom. days.
(Table X, p. 48). Ashadha New Moon, A.D. 484 ...	June 9·67	4·50 + 3·95
(Table XI-D, overleaf) Shortest Interval from Ashadha New Moon to No. 17 Anuradha Nakshatra ...	+10·74	+10·74
(Table XI-E, overleaf) Nak. correction for A.D. 484-85 is that corresponding to $24·39 = 0·41$ minus $·03 =$...	+ ·38	+ ·38
	<hr/> June 20·79	<hr/> 19·57
(Eye-Table) ☾'s tithi equation for Anom. of 19·57 days, reduced to Nakshatra Equation, is ...	+ ·35	
	<hr/> June 21·17	

Our Nakshatra Anuradha (No. 17) ended on 21 June, A.D. 484, at 17, *i.e.*, 10 ghat. after mean sunrise.

N.B.—In using the Eye-Table for Nakshatra and Yoga equations, we should first of all find the equation as if we were investigating a tithi, and then reduce the tithi equation to a Nakshatra or Yoga equation according to the scale furnished by the Eye-Table. We give another example to illustrate this.

IV.—Required the ending moment of Yoga Sukla (No. 24) in June 484 A.D. (see Tables, p. 232).

	days.	☉'s Anom. days.	☾'s Anom. days.
(Table X, p. 48). Ashadha New Moon, A.D. 484 ...	June 9·67	24·39 +59·06	4·50 + 3·95
(Table XI-D, overleaf). Shortest interval from Ashadha New Moon to No. 24 Yoga Sukla ...	+ 10·57	+10·57	+10·57
(Table XI-E, overleaf). Yoga correction for A.D. 484-85 is that corresponding to an argument of 24·39 days, <i>i.e.</i> $0·77$ minus $·05$...	= + 0·72	+0·72	+ 0·72
	<hr/> June 20·96	<hr/> 94·74	<hr/> +19·74
(Eye-Table) Sun's tithi equation for 94·74 days, is $-·04d$. This with sign reversed (for Yoga), and reduced to scale of Yoga equation, becomes ...	... +·03d.		+ 0·03 (☉'s Yoga Equation.)
(Eye-Table). Moon's tithi eqn. for 19·77 days is $+·41d$. This, reduced to scale of Yoga equation, becomes ...	+·35d.		<hr/> 19·77
Sum of Sun's and Moon's Yoga equations ...	+·38 + ·38		
Ending moment of our Yoga No. 24, Sukla. ...	June 21·34 = $20\frac{1}{2}$ gh. after mean sunrise on 21 June, A.D. 484.		

INDIAN CHRONOLOGY

(SOLAR, LUNAR AND PLANETARY)

B.C. 1 to A.D. 2000.

PART I.

Relations between Indian Astronomy and Indian Chronology.

N.B.—Decimal parts of a day may be converted into *ghatikas* and *palas* (*naligais* and *vinadis*) by means of Table XIX, and into *hours* and *minutes* by means of Table XX.

CHAPTER I.

THE SYNODICAL MONTH AND THE INDIAN SOLAR YEAR.

1. Astronomical Constants.—A regular treatise on astronomy always closes with a chapter on astronomical constants, *viz.*, those elements of calculation which are of use in predicting astronomical events. A book on astronomical computation, like the present one, must begin, not end, with astronomical constants.

2. First Astronomical Constant.—The Moon's Synodical Month or Lunation.—The first astronomical constant we have to know in Hindu astronomy is the moon's synodical month of $29\frac{1}{2}$ days. The exact length of this period, according to the *Sūrya Siddhānta*,* which we shall always follow, except when otherwise stated, is 29·530587946 days. The ancient Hindu astronomers purposely calculated this period to what we should now call nine places of decimals in order that there might be no error even after thousands of years. The period fixed by modern astronomy does not differ from the above in the first six decimal places, and as ·0000008, the actual difference, is $\frac{7}{100}$ of a second, it follows that the difference between European and Indian astronomy in 5,000 years or 61,844 synodical months may amount to 4,260 seconds or a little over 1 hour and 11 minutes. We shall see, when we come to compute new moons, that, in practice, the difference between the European and the Indian computation of new moons is very much less. [*Vide* Sec. 118, Rule (3) *infra*.]

3. What is a Synodical Month?—A synodical month or lunation is the interval between one new moon and another. You are apt to imagine that this is the period in which the moon travels once round the earth. It is not so. It is the period in which the moon gains one complete revolution over the apparent or visible motion of the sun: and as this is a most essential fact, which you should thoroughly understand in order to work any problem in Indian dates intelligently, we will spend some time in considering it.

The moment of new moon is the moment when sun and moon have the same longitude, *i.e.*, are at the same distance measured from a fixed point in the heavens. When once

* The *Sūrya Siddhānta*, the best known system of Indian astronomy, is believed to have been current in its present form since the 11th Century A.D. and is the standard for all India. Numerous other *Siddhāntas* are extant, but only one of them, the *First Arya Siddhānta*, is referred to in the present work, in addition to the *Sūrya Siddhānta*.

this moment is past, the moon resumes her journey at the rate of, say, 13 degrees a day and the sun resumes his at the rate of one degree a day. It follows that the moon gains twelve degrees over the sun in a day and therefore she gains 360 degrees in about 30 days. All these figures of days are approximate, but they will enable us to picture to ourselves what takes place. The synodical month, then, is the period during which the moon gains 360 degrees over the sun, and its exact length is 29·530587946 days.

4. The Solar Year.—The next astronomical constant which we have to study is the solar year, the length of which, according to the *Sûrya Siddhânta*, is 365·258756484 days. You have probably heard that the length of the year, according to modern astronomy, is 365·2422408 days, that the Julian calendar made out the year to be 365·25 days, *i.e.*, .00776 of a day in excess of the correct figure; that to rectify this error, Pope Gregory in 1582 ordered the dropping out of 10 days and the British Parliament in 1752 * similarly dropped out 11 days, and that to avoid a recurrence of the error, we now drop out three leap years out of every hundred. You may be inclined to wonder that the Hindu astronomers adopted for their solar year a period which is not less than one ghatika in excess of the modern astronomical year. The year of 365·2422408 days is, however, a *tropical* year, whereas the Hindu astronomical year is an *anomalistic* † year, and we should really compare the Hindu year with the modern *anomalistic* year, which we seldom hear of in practice, but the correct length of which is 365·2596296 days, being an excess of .001 day over the Hindu year. This no doubt makes a difference of several days in the course of four or five thousand years, but as the Hindu year is essentially lunar and not solar, not much practical inconvenience is caused by the difference.

Perhaps you would like to know the practical difference between a tropical and an anomalistic year. A tropical year is that which brings the *seasons* round at the same time of the year, whereas an anomalistic year is that which brings back the sun's *anomaly*, *i.e.*, the rate at which he moves round the earth. This rate varies according as the sun is near to, or removed from, his perigee, *i.e.*, the point when he is nearest the earth, and once a year the sun returns, as it were, to his old pace. Now this varying pace of the sun is very important for calculating the moment of new moon, as well as for calculating the moment of sunrise, and this is probably why the Hindu astronomers reckon the course of the sun by the anomalistic, instead of by the tropical, year.

5. The Decursus of the Hindu Solar Reckoning.—Hindu astronomers reckon the present chronology from the midnight between 17th and 18th February 3102 B.C., which is commonly called the beginning of *Kaliyuga*. On the morning of 18th February 3101 B.C., that is one year later, one complete Hindu solar year had run out by 6·13 a.m., *i.e.*, at .25875 of the day. As however the Hindu day is always reckoned from sunrise, mean sunrise for the whole of India being at 6 a.m., the first year is reckoned to have been completed at 13 minutes (or exactly .00876 of a day) Indian time of the day, on 18th February 3101 B.C. At this moment the year 1 of Hindu chronology began. You probably think it

* This was the occasion when the NEW STYLE (more fully explained in Ch. XXVI, Secs. 231 to 241, "Varu or Week-day") was introduced.

† Strictly speaking, a *sidereal* year, but the designation *anomalistic* year is more suitable at this stage in order to lead up to the sun's *anomaly*.

was the year 2 which began on 18th February 3101 B.C., and not the year 1 ; but the Hindus generally reckon completed or expired years, and not current years, as the European calendar does ; and this is another point which you should thoroughly understand. The first year of the Hindu chronology, which began on 18th February 3102 B.C., is, according to Hindu reckoning, the year 0. By adding 3101 to an English calendar year A.D. you can always arrive at the corresponding (expired) year of Kaliyuga. Thus the present year 1910 A.D. is K.Y. 5011. For a B.C. year, the K.Y. equivalent is obtained by subtracting it from 3102, not 3101.

6. Correspondence between A.D. and K.Y. years.—Tables VI, VII, and X exhibit in a very simple and intelligible manner the correspondence between A.D. and K.Y. years. Advantage is there taken of the fact that a century year A.D. corresponds to a century year K.Y. increased by 1. Thus 100 A.D. corresponds to 3201 K.Y., 1900 A.D. to 5001 K.Y., and so on.

If you reckon 365·258756484 days for every Hindu year, you will find that the commencement of 3101 K.Y. fell on 16th March, 1 B.C., at ·15379 of the day. The Hindu astronomers, however, have to drop 2·1706944 days out of this reckoning, because the Indian Solar Year 0 Kaliyuga really began 2·1707 days before the moment above assigned for its commencement. This dropping out or correction is called *Sodhya*,* and we shall meet with it again.

It thus happens that 3101 K.Y. commenced in 1 B.C. on 13th March at ·9831 of the day after mean sunrise (6 a.m.). From this point Tables VI, VII, and X will carry us on regularly through every year up to 2000 A.D.

CHAPTER II.

FIXING THE MOMENT OF MEAN NEW MOON.

7. At the first moment of K.Y. 0, according to the *Sûrya Siddhânta*, the sun and moon had the same mean longitude, that is, the moon was *new* at that instant. At the first moment of 1 K.Y., 365·258756484 days would have passed, that is 12 synodical months, and in addition 10·891701134 days. That is, at the first moment of K.Y. 1, the moon was not new as she was at the first moment of K.Y. 0, but she was 10·89170 days old : and the first mean new moon in K.Y. 1 occurred on 29·530587943 *minus* 10·891701134 days = 18·638886812 days after the commencement of K.Y. 1. In this way in every Hindu year the first mean new moon would occur 18·63889 days later than in the previous year. In the year K.Y. 2 a mean new moon occurred $2 \times 18·63889$ days = 37·27778 days later than the commencement of the year, but as this period exceeds a synodical month, the *first* mean new moon in K.Y. 2 really occurred 37·27778 *less* 29·53059, that is, 7·74719 days after the commencement of the year K.Y. 2. The day of occurrence of the first mean new moon in each successive year after 0 K.Y. is given in Table VII, and we see from that table that in 100 K.Y. the first mean new moon occurred 3·46164 days after the commencement of the year. We follow the table

* The *Sodhya* should, properly speaking, be applied to every year, including year 0 Kaliyuga. The point should be borne in mind when calculating solar dates and tithis in any year. B.C. The nature of the correction called *Sodhya* is explained in Sec. 66.

through 200, 300, etc., years, till we find that in 3000 K.Y. the first mean new moon occurred 15·25746 days after the commencement of the solar year. For 3101 K.Y. (or 1 B.C.) we reckon the time of occurrence of the first mean new moon thus :—

	Days.
For 3000 years	15·25746
For 100 years	3·46164
For 1 year	18·63889
	<hr/>
	37·35799
Deduct 1 completed synodical month ...	29·53059
	<hr/>
	Remainder ... 7·82740
Add the <i>Sodhya</i> which causes the solar year to commence 2·1707 days earlier than it does by mean computation (<i>vide</i> Sec. 66 <i>infra</i>) ...	... + 2·1707
	<hr/>
Occurrence of first mean new moon in K.Y. 3101 (1 B.C.) ...	9·99810 days.

That is, in 1 B.C., the first mean new moon of the Hindu solar year occurred almost exactly 10 days (properly 10 days less ·0019 of a day) after the commencement of the solar year.

8. From 1 B.C. we can follow the occurrence of the first mean new moon in each successive year according to the Tables VI and VII, the figures in which have merely to be added up suitably for each year. Thus if we require the date of the first mean new moon in the current solar year K.Y. 5011, we proceed according to the tables :—

For K.Y. 5001, 16·70809 days. (Tab. VI).

For 10 years, 9·20534 „ (Tab. VII).

For K.Y. 5011, 25·91343 „

That is, the first mean new moon in the year A.D. 1910–11, K.Y. 5011, occurs 25·91343 days after the commencement of the solar year, and as the solar year itself commences, as we may see from other columns of the same tables, on Ap. 12·62041

+·58756

i.e., on April 13·20797

it follows that the addition of 25·91343 days, or 39·12140 days from 1 April, in other words 9·12140 days in May 1910, will give us the time of occurrence of the first mean new moon in K.Y. 5011. We may, if we like, convert the decimal places into *ghatikas* and *palas* or *hours* and *minutes*, according to Table XIX or XX, and we shall have as the result, 9th May 1910, 7 *ghatikas* and 17 *palas* or 2 hours and 55 minutes. This is the time of occurrence of *mean* new moon. About the *actual* ending moment of this or any other new moon *tithi*, we shall learn presently.

N.B.—For the meaning of *ghatika* and *pala*, See Sec. 130 *infra*.

CHAPTER III.

SUN'S AND MOON'S ANOMALY AND ACTUAL MOMENT OF NEW MOON.

9. We computed the time of occurrence of the first mean new moon in K.Y. 5011, and we arrived at the result, 7 *ghatikas* and 17 *palas* after mean sunrise on 9th May 1910. If now we look into a Panchāṅgam, computed from the English Nautical Almanac, like Mr. Srauti's Tiruvādi Panchāṅgam or Messrs. Rāghava Chāri & Son's Nungumbaukam Panchāṅgam, we shall find the time of occurrence of the new moon in May 1910 to be 9th May, 13 *ghatikas* and 2 *palas* after sunrise. It is encouraging that we are so near the Panchāṅgam result, but we are not near enough. The Panchāṅgams in question are calculated

for the latitude and longitude of Kumbakonam and Madras, respectively, whereas our calculation is for mean sunrise (6 a.m.) at the Equator on the meridian of Ujain, which is accepted by Hindu astronomers as a starting point in the same way as Greenwich is accepted by modern English astronomers. It is known that Madras time is 18 minutes or 45 palas in advance of Ujain time, and, further, sunrise at Madras on the 9th May 1910 is noted in the Panchangam as occurring 12 minutes or 30 palas before 6 a.m. These two circumstances account for a difference of 75 palas or 1 ghaṭika and 15 palas between our mean time and the Panchangam time, but there is still a difference of 4 ghaṭikas and 30 palas or .0750 of a day to be accounted for.

10. We account for it thus. Although mean new moon occurs every 29.53059 days, the actual new moon does not recur at exactly this interval. About the time when the moon is due to become new, she may be fast, or she may be slow, and we have to take this circumstance into consideration. Hindu astronomers have devised a table of the moon's anomaly which enables us to calculate exactly by how many degrees the moon is in advance of, or behind, her mean position at new moon or at any other time. The original tables of the moon's anomaly and equation of the centre, as these constants are called, will be found in Professor Jacobi's standard article on the subject in Vol. I of the *Epigraphia Indica*. For the sake of practical convenience, we may convert the degrees into time and further calculate the anomaly for each .001 of the equation, and the result will be our Table IX. This table shows us exactly what time should be added to or deducted from mean time in order to arrive at the actual moment of occurrence of new moon.

11. To use this table, you should know the moon's anomaly at the time you are dealing with, and the moon's anomaly is determined for centuries and odd years in the same way as the *mean* moment of the first new moon is determined for every solar year. The moon completes an anomalistic month, that is, returns to a particular place round the earth in 27.5546 days, and in a solar year the moon's anomaly increases by 365.25875 less $13 \times 27.5546 = 7.04896$ days as shown in Table VII, Column 4. In 100 years the anomaly increases by 16.03078 days and we calculate, as before, the anomaly for the commencement of the solar year K.Y. 3101 (B.C. 1).

	Days.
For 3000 years	12.49527
For 100 years	16.03078
For 1 year	7.04896
For 3101 K.Y.	35.57501
<i>Deduct</i> one completed anomalistic month ...	27.5546
	8.02041

Add the moon's anomaly at the first instant of K.Y. 0, which, according to the Sūrya Siddhānta, was 90° from perigee or 6.8886 days, and *deduct* Sodhya

2.1707 days, 4.7179

4.7179 12.73831 days.

12. The result, 12.7383 days, is just what we find entered in Table VI as the moon's anomaly at the commencement of K.Y. 3101 (B.C. 1). From this point we go on, year by year and century by century, till we reach 1600 A.D., when a correction, or *bija*, introduced by the

Hindu Astronomer Ganesa Daivajna, comes into operation. The effect of this *bija* is to raise the annual increase of the moon's anom. from 7.04896 d. to 7.04898 d. or by 2 seconds of time every year, and also to diminish the length of the anomalistic month from 27.5546 to 27.55459797 or .000002 d., *i.e.*, $\frac{1}{5}$ of a second every month. As a result of this correction, the anomaly for the commencement of K.Y. 5011 (1910-11 A.D.) is 2.1759 days. As the first new moon in the same year occurs (*vide* Section 8 *supra*) on the 25.9134th day after the commencement of the year, the anomaly for the time of the first new moon is

$$\begin{array}{r}
 25.9134 \\
 + 2.1759 \\
 \hline
 28.0893 \\
 \text{Deduct completed anomalistic month—} 27.5546 \\
 \hline
 .5347 \text{ of a day.}
 \end{array}$$

13. As new moon is the moment when the moon has gained exactly 360° over the sun, we have, in determining this moment as well as the moon's anomaly at this moment, to take account of the sun's pace as well as the moon's. The sun's pace depends on his position in the anomalistic year, and that we know (Sec. 4) is the Hindu solar year. We also know that at the time of occurrence of the first new moon in K.Y. 5011 the sun had advanced 25.9134 days in the anomalistic year. We simply look for the corresponding equation in the table of sun's anomaly (Table IX-c) and we find it to be midway between +.145 and +.144. We put down +.1445 as the equation we require and *add* thereto .5347, the moon's anomaly already found. Net moon's anomaly, .6792.

We look in the table of moon's anomaly (Table IX-a) against .679 of a day and we find the equation to be between —.059 and —.060. The actual anomaly entered in the table is .677, and as our anomaly is .679, we take a suitable equation by proportional parts, *i.e.*, .0592.

We now *add* the total of sun's and moon's equations (+.1445 —.0592), or +.0853 to the mean time already found, 9.1213* d., and obtain 9.2066, *i.e.*, 12 ghaṭikas 24 palas after mean sunrise on 9th May 1910. For the present we might be satisfied with this result, which agrees with sufficient closeness with that (13 ghaṭikas 2 palas) of the Nautical Almanac and the Panchāṅgams based thereon; for if we add the effect of longitude and local sunrise, already adverted to in Section 9 *supra*, our local time for the ending moment of the new moon tithi will be 13 ghaṭikas 39 palas after sunrise.

14. The reasons for the various processes whereby we arrive at the actual ending moment of any tithi will be clear to us when we come to Chapter XXIII "Theory of anomalies and equations," but one word on the subject may perhaps be usefully said before we close this chapter. The reader will observe that each anomaly table in our Table IX is divided into four equal portions, two having additive equations and two subtractive. Each equation, as given in the table, consists of three decimal places, the first two being given in vertical columns and the third in a horizontal column. The horizontal column is not necessary when all we want to know is how many hours or how many ghaṭikas after sunrise a

* The reader should note that two fractions of the day are usually quoted for the moment of occurrence of any astronomical event, *tithi*, *nakshatra*, *yoga*, *karana*, etc. The first fraction (in this case .9134) is part of a period of time reckoned from the beginning of the solar year, while the second fraction (in this case .1213) is the time of the day, reckoned from mean Lanka sunrise, 6 a.m. The difference between the two fractions is (as will be seen from Sec. 8 *supra*) the fraction of day marking the commencement of the solar year, one of the data entered in Table X.

new moon or other tithi occurred, and consequently, the horizontal place of the equation, namely, its third decimal place, is omitted in the Eye-table at the end of the book. On the other hand, when such a course is necessary for very accurate work, a *fourth* figure may be added to the third shown in the horizontal column by noting the difference between two successive anomalies and taking a proportional part of the difference between the corresponding equations. Thus, supposing we want the equation for a ☾'s anomaly of 7.25 days: the anomalies and equations next to those we want are—

☾'s An. 7.077 d.	...	☾'s An. 7.275 d.	...	Diff. .198 d.
Eqn. -.413 d.	...	Eq. -.414 d.	..	Diff. .001 d.

Inasmuch as the difference in *anomaly* between 7.077 and 7.25 is $\frac{.173}{.198} = .9$ of the tabular difference, we can *add* 9 to the lower *equation* and take .4139 as the equation corresponding to ☾'s anomaly, 7.25 days.

We should note that sometimes the *lesser anomaly has the higher equation*. Thus, supposing we require the equation for ☾'s An. 20.375 d. We note the following as the nearest anomalies:

☾'s An. 20.210 d.	...	☾'s An. 20.577 d.	...	Diff. .297 d.
Eqn. +.414 d.	...	Eqn. +.413 d.	...	Diff. .001 d.

Our anomaly is lower than 20.577 by $\frac{.202}{.297} = .7$ of the difference. We therefore *add* 7 as a fourth figure to the equation +.413 and take +.4137 as the equation we require.

In all cases we should add to, or subtract from, the equation *corresponding* to the anomaly from which we took the difference. In this case, if we had taken the difference from 20.280, it would have been .095 and the proportional part $\frac{.095}{.297} = .3$, which we should *deduct* from the fourth place of .414. Thus our equation would be +.414 minus .0003 = +.4137, the same as before.

The same observations apply to solar anomalies.

15. For ordinary results, we do not require a fourth place in the equation, and we can take the nearest three place equation that we can find in Table IX and thus, by means of a simple sum in addition or subtraction, discover, without a moment's trouble, the actual from the mean moment of a tithi or nakshatra. Even then we shall be far more accurate than by any of the rough-and-ready methods now in use.

CHAPTER IV.

THE SOLAR MONTHS.

16. The solar months of the Indian calendar are named in Table II. The reader will note that the Tamil names of months are practically the same as the Bengal names, but that the first Bengal month *Vaisákha* gives the name to the second Tamil month and so on, the last Bengal month *Chaitra* being the first Tamil month *Chittirai*.

Also, the Malayalam names of months are generally the same as the signs of the zodiac: the first two are called *Medam* and *Edavam* instead of *Mesam* and *Rishabham*.

But whether in the Tamil country or in Malabar or in Bengal, the measure of the solar months is the same. Like the solar year, each solar month ends at a *fraction of the day*, that is, at the moment when the next sankrānti takes place. For purposes of computation, the *sankrānti*, as well as the month to which it gives its name, is reckoned from the very

moment at which the previous month ends. But in practice in the Tamil country, when a sankrânti takes place after sunset, the next month begins next day ; and when the sankrânti occurs before sunset, *that* is the first day of the next month, and the old month loses a day. We shall have occasion, when dealing with the use of the tables, to note some of the practical consequences of the working of this rule, and we shall mention at the same time the corresponding rules in other parts of India. (Secs. 144, 145 *infra*.)

17. Note that the solar months in the Indian calendar, which have 30 days each, are placed at fairly regular intervals, and that the months with 31 days each, as also those with 29 days each, are arranged continuously. Thus the series is :

30	30
31	29
31	29
31	29
31	29
	29
	30

which is fairly symmetrical. Owing, however, to the working of the rule about *sankrântis* before and after sunset, a month may have occasionally an extra day, and solar months with 32 days are not infrequent, as we may see from Table XII. Any consequent confusion can always be avoided if you invariably determine *the fraction of day* at which a month ends and the next begins.

CHAPTER V.

THE LUNAR MONTHS IN RELATION TO SOLAR MONTHS.

18. The lunar months are the *doors* to the Indian calendar, but the solar months are the *hinges* on which the doors move. Every lunar month takes its name in Bengal from the solar month *in* which it occurs, and in the Tamil country from the *next* solar month after that in which it occurs.

19. Thus the lunar Vaiśākha *must* begin sometime in the solar Vaiśākha (Bengal) or sometime in the solar Chittirai (Tamil). The lunar month being only 29·53 days in length, there may be two new moons between the beginning and end of a solar month, and in this case *both* receive the same name, the first being called *Adhika* and the second *Nija* or true. The second is called 'true' because it immediately precedes a sankrânti. *Adhika* months occur ordinarily once in three years, as may be seen from Tables X and XII.

20. More rarely, that is about once or twice a century, a lunar month may begin and end without a solar month beginning between, and then some lunar month must be suppressed as there is no hinge on which this particular door can turn. The suppressed lunar month is said to be *kshaya** or in defect.

21. We will now take three examples illustrating the different kinds of lunar years : (1) a year consisting of twelve lunar months, corresponding to as many solar months ; (2) a year consisting of thirteen lunar months, which will include an *adhika*, *i.e.*, an extra or *intercalary* lunar month ; (3) a year of thirteen lunar months, exhibiting two intercalary or *adhika* lunar months and one suppressed or *kshaya* lunar month.

* Beginners find great difficulty in understanding *adhika* and *kshaya* months, because the idea is so utterly unlike anything in any other calendar ; but the examples given on the next and following pages will enable the reader to cross safely over this *pons asinorum* of the Indian calendar.

SCHEME OF MONTHS IN K.Y 5011, A.D. 1910-11.

Lunar Months ...	A.D. Date and Fraction of Day of mean New Moon.	Day and Fraction of Day of Solar Year when mean New Moon occurs, also Sun's Anomaly for New Moon.	Day and Fraction of day of Solar Year when Sankranti occurs: names of Solar Months commencing at each sankranti. S.M. = SOLAR MONTH	Moon's Anomaly at moment of each mean New Moon. (To the ☾'s An. at first new moon of Solar Year add 1·976 days for each lunar month)
	A.D. 1910. Indian Solar Year commences Ap. 13·2080. (Tab. X, p. 126.)		K.Y. 5011. Mesha sankranti Vaisakha S.M. ; Chittirai and Medam S.M. ; solar year begins.	
1. Vaisakha ...	May 9·1214.	25·9134 (Tab. X.)	30·9353. Vrishabha sank. Jyeshtha S.M. ; Vaikasi or Edavam S.M.	0·534 (Table X.)
2. Jyeshtha ...	June 7·6520.	55·4440	62·3555. Mithuna sank. Ashada S.M. ; Ani S.M.	2·510
3. Ashada ...	July 7·1826.	84·9746	94·0003. Karkata sank. Sravana S.M. ; Adi S.M.	4·486
4. Sravana ...	Aug. 5·7132.	114·5052	125·4755. Simha sank. Bhadrapada S.M. ; Avani S.M.	6·462
5. Bhadrapada.	Sep. 4·2437.	144·0357	156·4942. Kanya sank. Asvina S.M. ; Purattasi S.M.	8·438
6. Asvina ...	Oct. 3·7743.	173·5663	186·9355. Tula sank. Kartika S.M. (Beng.) ; Aippasi S.M.	10·414
7. Karttika ...	Nov. 2·3049.	203·0969	216·8289. Vrischika sank. Margasira S.M. ; Kartigai S.M.	12·390
8. Margasira ...	Dec. 1·8355.	232·6275	246·3192. Dhanus sank. Pausha S.M. ; Margali S.M.	14·366
9. Pausha ...	Dec. 31·3661.	262·1581	275·6369. Makara sank. Magha S.M. ; Tai S.M.	16·342
10. Magha ...	A.D. 1911. Jan. 29·8967.	291·6887	305·0850. Kumbha sank. Phalgunas S.M. ; Masi S.M.	18·318
11. Phalgunas ...	Feb. 28·4273.	321·2193	334·9053. Mina sank. Chaitra S.M. ; Panguni S.M.	20·294
12. Chaitra ...	Mar. 29·9579.	350·7499	365·2587. Mesha sank. Vaisakha S.M. ; Chittirai S.M.	22·270

N.B.—The main point to which the reader's attention should be directed is that the lunar month following a new moon has its name determined by its occurring *before* a particular sankranti. Thus, a lunar month commencing at any time between 0 day of the solar year and the 30·9353rd day is called **Vaisakha**; similarly, a lunar month commencing at any time between 156·4942 days and 186·9355 days of the solar year is called **Asvina** and so forth. The lunar month commencing before the Mesha Sankranti is called **Chaitra**.

22. For the first we shall select the current Indian year K.Y. 5011, A.D. 1910-11 ; for the second we shall select last year, K.Y. 5010, A.D. 1909-10 ; and for the third, because there has been no suppressed month since A.D. 1822, and there will be none again till A.D. 1963, we will select the very first year of our chronology, K.Y. 3101, B.C. I.

23. The solar year K.Y. 5011, A.D. 1910, which is a normal year, opens, as every year does, with the *Mesha Sankrânti* or entrance of the sun into the Indian *first point of Aries*, from which our celestial longitudes are reckoned. We have already seen how this moment is determined, namely, by the successive addition of 365·25875 days since the first moment of the year 0 *Kaliyuga*, less the *sodhya* of 2·1707 days. The *Mesha Sankrânti* determines all kinds of solar years in use in India, and it also determines directly the lunar year, since the first lunar month *Chaitra* is defined to be that whose commencement precedes the *Mesha Sankrânti* and the first day of the lunar year is that on which *Chaitra Sukla Pratipadâ* or the first tithi of the bright fortnight of *Chaitra* was current at sunrise. In our scheme of months in Table X and elsewhere the reader will observe that the lunar month *Chaitra* stands last, but this is only for purposes of computation, and, after all, the lunar month *Chaitra* begins in a previous solar year, and so it stands last among the lunar months of that year.

The moment of the *Mesha Sankrânti* marks the commencement of the solar month *Vaisâkhâ* in Bengal, of the solar month *Chittirai* in the Tamil country, and of the solar month *Medam* in Malabar, Travancore, and Cochin.

Each month begins and ends with a *sankrânti*, and the second and other *sankrântis* are named in the order of the signs of the zodiac, *Vrishabha*, *Mithuna*, etc.

24. There is no difficulty about the lunar months in A.D. 1910-11, since the new moons and *sankrântis* occur *alternately*, each *door* having its own *hinge* to turn on. If you like to calculate the actual moment of occurrence of each new moon, it will be a useful exercise for you to do so, and you can use the anomalies noted in columns 2 and 4.

SCHEME OF MONTHS IN THE YEAR A.D 1909-10, K.Y. 5010.

Lunar Months ...	A.D. Date and Fraction of Day of mean New Moon.	Day and Fraction of Day of Solar Year when mean New Moon occurs, also Sun's Anomaly for New Moon.	Day and Fraction of Day of Solar Year when <i>sankrânti</i> occurs ; names of Solar Months commencing at each <i>sankrânti</i> . S.M.=SOLAR MONTH.	Moon's Anomaly at moment of each mean New Moon. [See this col. on p.(9).]	Sum of Sun's and Moon's equations (by Table IX a to e).
	A.D. 1909. Indian Solar Year commences. Ap. 12·2492 (Tab. X).		K.Y. 5010. <i>Mesha sankrânti</i> <i>Vaisakha</i> S.M.; <i>Chittirai</i> or <i>Medam</i> S.M. Solar Year begins.		
1. <i>Vaisakha</i> ...	Ap. 20·2238	7·2745 (Tab. X).	30·9353. <i>Vrishabha sank.</i> <i>Jyeshtha</i> S.M. ; <i>Vaikasi</i> or <i>Edavam</i> S.M.	2·401 (Tab.X)	
2. <i>Jyeshtha</i> ...	May 19·7543.	36·8051.	62·3555. <i>Mithuna sank.</i> <i>Ashada</i> S. M.; <i>Ani</i> S.M.	4·377.	

SCHEME OF MONTHS IN THE YEAR A.D. 1909-10, K.Y. 5010.

Lunar Months ...	A.D. Date and Fraction of Day of mean New Moon.	Day and Fraction of Day of Solar Year when mean New Moon occurs, also Sun's Anomaly for New Moon.	Day and Fraction of Day of Solar Year when sankranti occurs, names of Solar Months commencing at each sankranti. S.M.=SOLAR MONTH.	Moon's Anomaly at moment of each mean New Moon.	Sum of Sun's and Moon's equation (by Table IX a to c).
	A.D. 1909.		K.Y. 5010.		
3. Ashada ...	June 18·2849	66·3357	94·0003. Karkata sankranti Sravana S.M.; Adi S.M.	6·353	
4. } Sravana {	July 17·8155	95·8663	125·4755.	8·329	
5. }	Aug. 16·3461	125·3970 — ·4470	Simha sank. Bhadrapada S.M.; Avani S.M.	10·305 — ·1253(☉'s Eq.)	— ·1253 — ·3217
		*124·9500		10·180	— ·4470
6. Bhadrapada.	Sep. 14·8767	154·9275	156·4942. Kanya sank. Asvina S.M.; Purattasi S.M.	12·281	
7. Asvina ...	Oct. 14·4073	184·4581	186·9355. Tula sank. Karttika S.M. (Beng.); Aip-pasi S.M. (Tam.).	14·257	
8. Karttika ...	Nov. 12·9379	213·9886	216·8289. Vrischaka sank. Margasira S.M.; Kartikai S.M. (Tam.).	16·233	
9. Margasira ...	Dec. 12·4685	243·5192	246·3192. Dhanus sank. Pausha S.M.; Margali S.M.	18·209	
	A.D. 1910.				
10. Pausha ...	Jan. 10·9990	273·0498	275·6369. Makara sank. Magha S.M.; Tai. S.M.	20·185	
11. Magha ...	Feb. 9·5296	302·5804	305·0850. Kumbha sank. Phalguna S.M.; Masi S.M.	22·161	
12. Phalguna ...	Mar. 11·0602	332·1110	334·9053. Mina sank. Chaitra S.M.; Panguni S.M.	24·137	
13. Chaitra ...	Ap. 9·5908	361·6416	365·2587. Mesha sank. Vaisakha S.M.; Chittirai S.M.	26·113	

25. In this year, as in 1910-11, the lunar months, up to Śrāvana, alternate with the solar months; but between the *Sankrāntis* due at 94·30003 d. and 125·4755 d. of the solar year, we have two mean new moons at 95·8663 d. and 125·3970 d., respectively. We may satisfy ourselves by computation of the anomalies, as shown above, that the second new moon really precedes the sankrānti at 125·4755 d. In such a case both the new moons receive the same name (here *Srāvana*), and the first is called *Adhika Srāvana*, the second *Nija Srāvana*. After this, the numerical order of the lunar months is disturbed, for the 6th new moon is called Bhādrapada, whereas in 1910-11, the 5th is Bhādrapada, and the remaining new moons, including Bhādrapada, alternate with the remaining sankrāntis, the total number of new moons for the year being 13 instead of 12.

We now pass to the third example.

* Actual moment of occurrence of new moon after allowing for solar and lunar anomaly.

SCHEME OF MONTHS FOR 1 B.C., K.Y. 3101.

Lunar Months ...	Date of mean New Moon by Christian era and fraction of day.	Day of Solar Year when mean New Moon occurs; also Sun's anomaly.	Day of Solar Year when sankranti occurs, also dates of commencement and end of Solar Months. S.M.=Solar Month.	Moon's anomaly at moment of New Moon.	Sun's and Moon's equations (by Table IX a to e).
	1. B.C. Indian Solar Year commences Mar. 13·9831 (Table X, page 24).		K.Y. 3101. Mesha sankranti Vaisakha S.M.; Chittirai or Madam S.M.		
1. Vaisakha ...	Mar. 23·98	9·99810	30·93523. Vrishabha sank. Jyeshtha S.M.; Vaisakasi or Edavam S.M.	22·736	
2. Jyeshtha ...	Apr. 22·51	39·52869	62·3555. Mithuna sank. Ashada S.M.; Ani S.M.	24·712	
3. Ashada ...	May 22·04	69·05928	94·0003. Karkata sank. Sravana S.M.; Adi S.M.	26·688	
4. Sravana ...	June 20·57	98·58986	125·4755. Simha sank. Bhadrpada S.M.; Avani S.M.	1·109	
5. Bhadrpada.	July 20·10	128·12045	156·4942. Kanya sank. Asvina S.M.; Purattasi S.M.	3·085	
6. } Asvina {	Aug. 18·63	157·65104	186·9355. Tula sank. Karttika S.M.; Aippasi S.M.	5·061	
7. }	Sep. 17·16	187·18163 — ·5844		7·037 — ·1724	— ·1724 } — ·4120 }
		*186·5972		6·865	— ·5844
8. Karttika ...	Oct. 16·69	216·71221 — ·5143	216·8289. Vrischika sank. Margasira S.M.; Kartigai (Tam.) S.M.	9·013 — ·1288	— ·1288 } — ·3855 }
		*216·1979		8·884	— ·5143
9. Margasira ...	Nov. 15·23	246·24280 — ·3212	246·3192. Dhanus sank. Pausha S.M.; Margali S.M.	10·989 — ·0522	— ·0522 } — ·2690 }
		*245·9216		10·937	— ·3212
Fausha ...	(Kshaya)		275·6369. Makara sank. Magha S.M.; Tai S.M.		
10. Magha ...	Dec. 14·176	275·77339 — ·0414	305·0850. Kumbha sank. Phalgun S.M.; Masi S.M.	2·965 + ·0391	+ ·0391 } — ·0805 }
	1 A.D.	*275·7319		13·004	— ·0414
11. Phalguna ...	Jan. 13·29	305·30398 + ·2501	334·9053. Mina sank. Chaitra S.M.; Panguni S.M.	14·941 + ·1193	+ ·1193 } + ·1308 }
		305·5540		15·060	+ ·2501
12. } Chaitra {	Feb. 11·82	334·83457 *+ ·4710		16·917 + ·1685	+ ·1685 } + ·3025 }
13. }	Mar. 13·35	335·3055 364·36515	365·2587. Mesha sank. Vaisakha S.M.; Chittrai or Medam S.M.	17·085 18·893	+ ·4710

* Day and fraction of day, marking exact moment of actual New Moon, after allowing for anomaly.

26 In this year there is nothing specially worthy of note till we reach *Asvina*: but for that month there is an *Adhika Asvina* just as we had an *Adhika Srāvana* in A.D. 1909. There is a peculiarity about *Nija Asvina* in the year B.C.1, which we must note carefully. The mean *Nija Asvina* at 187·1816 days is not before the sankrânti at 186·9355 days, but the actual new moon, after calculation of anomalies, is found to be before 187·1816 days and is therefore *Nija Asvina*, not *Kârttika*. Generally speaking, when a *nija* or *adhika* month is within ·6 day on either side of a sankrânti, calculation, or at least a consideration, of the anomalies is necessary before we can determine its true character.

27. Passing *Âśvina*, in the year 1 B.C., we find that each of the subsequent mean new moons is within ·6 day of a sankrânti, and we must therefore calculate the anomalies in order to be quite sure whether each new moon is on this or that side of a sankrânti. Having made these calculations, we find that between two sankrântis at 246·3192 d. and 275·6369 d. there is no new moon, although there is a new moon just under six ghaṭikas (·095 d.) *after* the second sankrânti. Had this new moon preceded the sankrânti ever so little, instead of following it, or had our method been inaccurate at this stage to the extent of 2 hours, the consequences we are about to state would not have followed. As it is, there is no new moon between the two sankrântis at 246·3192 d. and 275·6369 d., and therefore the lunar month which has no hinge to turn on is shut; this fact is expressed by saying that *Pausha* lunar month is *kshaya* or suppressed.

28. How do we know that the lunar month to be suppressed is *Pausha* and not any other? Because that is the first new moon which we are unable to place *before* a sankrânti. We find that *Mâgha* and *Phâlguna* are each followed by a sankrânti, though a long way off, and between the sankrântis at 334·9053 d. and 365·2587 d. there are again two new moons, that is to say *Chaitras*, the first of these being *adhika* and the second *nija*. Here also we note that appearances are deceptive, for the mean new moon at 334·8346 is apparently a *Phâlguna*, but the calculation of the anomalies shows it to be an *adhika Chaitra*.

29. Generally, (1) a *kshaya* month is preceded and followed, though not immediately, by an *adhika* month; (2) there are, as a rule, only one or two *kshaya* months in a century; (3) the *kshaya* months must be calculated from the mean moment by means of anomalies before we can prove them to be *kshaya*; and (4) only one of three months, *Mârgasira*, *Pausha*, and *Mâgha*, can be *kshaya*, because these are the three lunar months which turn on solar months of 29 days each.

The following table enables us to know an *adhika* month or a *kshaya* month by mere inspection of the date of occurrence of the first new moon in a solar year:—

Names of Lunar Months.	Ending moments of Solar Months.	Periods of Lunar Months.	Limits of Adhika and Kshaya Months.
			The lunar month noted in column I will be an <i>adhika</i> month if first New Moon in Solar Year occurs before
Vaisakha ..	30·93528 d.	29·53059 d.	1·40469 d.
Jyeshtha ...	62·35555 d.	59·06117 d.	„ 3·29438 d.

Names of Lunar Months.		Ending Days of Solar Months.	Periods of Lunar Months.	Limits of Adhika and Kshaya Months.
Ashada	...	94·00028 d.	88·59176 d.	The lunar month noted in column I will be <i>adhika</i> if first New Moon in Solar Year occurs before 5·40851 d.
Sravana	...	125·47555 d.	118·12235 d.	„ 7·35320 d.
Bhadrapada	...	156·49417 d.	147·65293 d.	„ 8·84122 d.
Asvina	...	186·93555 d.	177·18353 d.	„ 9·75201 d.
Karttika	...	216·82888 d.	206·71411 d.	„ 10·11475 d.
Margasira	...	246·31916 d.	236·24470 d.	{ The lunar month noted in column I will be <i>kshaya</i> if first New moon in Solar year occurs after 10·07446 d. and before 10·11475 d. { after 9·86164 d. and before 10·07447 d. { after 9·77910 d. and before 9·86164 d.
Pausha	...	275·63694 d.	265·77529 d.	
Magha	...	305·08499 d.	295·30588 d.	
Phalgunā	...	334·90527 d.	324·83647 d.	{ The lunar month noted in column I will be <i>adhika</i> if first new moon in solar year occurs after 9·77912 d. and before 10·06880 d. { after 10·06880 d. and before 10·89170 d.
Chaitra	...	365·25875 d.	354·36705 d.	

N.B.—All the figures in column 4 are obtained by subtracting the corresponding figures in column 3 from those in column 2.

30. We see that if the first new moon in a solar year occurs before 1·40469 days (the difference between 30·93528 and 29·53059) of the solar year, there will be a second new moon before the end of the first solar month. Reasoning in the same manner, we see that if the first new moon in a solar year occurs after 1·40469 days, but before 3·29438 days of the solar year, there will be two new moons between the commencement of the first and second solar months, that is, there will be an *Adhika* as well as a *Nija Jyeshtha*. Similar reasoning will enable us to connect the possibility of occurrence of the several *adhika* and *kshaya* months with the occurrence of the first new moon before or between the days mentioned in the fourth column. It will be a useful exercise for the reader to try and reason out for himself each line of this table. For determining *mean* intercalations and *mean* suppression, the table can be used as it stands; and taken with suitable anomalies, it is a safe and reliable guide for ascertaining true *adhika* and true *kshaya* months. We believe that this is the first time that so simple a method has been announced for recognizing *adhika* and *kshaya* months.

TITHIS.

31. Tithis are in use over the whole of India for religious purposes and over the greater part of it for civil purposes also. To understand *tithis* thoroughly is to have mastered the system of Hindu chronology. Hence “Tithis” take the lead in the second title of this work.

32. A lunation or synodical month is divided into thirty tithis or lunar days of equal mean length. The names of tithis are familiar to all Hindus, but they are given for convenience of reference on the same page as Table II. The first fifteen tithis, corresponding to the bright half of the month, are called *Sukla paksha*; and the second fifteen are called *Krishna paksha* or *Bahula paksha*. The last or 30th tithi is new moon or *Amāvāsyā*, and it is

called sometimes by the name of the month of which it marks the end, and sometimes by the name of the following month. Thus the moment of Amâvâsyâ, which marks the beginning of Vaiśākha and which in this work is invariably called the "Vaiśākha new moon" is the same as the ending moment of the 30th tithi of Chaitra. In an inscription* "Vaiśākha Amâvâsyâ" often means the Amâvâsyâ at the *end* of Vaiśākha, but for convenience of computation, the first new moon in the solar year is in this work called the Vaiśākha new moon, while the 30th tithi of Vaiśākha is called the Jyeshṭha new moon, and so on with the rest of the lunar months. (See remarks by Dr. Thibout, *Indian Antiq.*, Ap. 1895, p. 88.)

33. To find the mean ending moment of a particular *tithi*, all you have to do is to add the corresponding duration in days, according to either Table II or the Eye-table, to the moment of the previous new moon.

Thus, to find the mean ending moment of the 18th tithi of Mâgha lunar month, called *krishna* or *badi* (contraction for *bahula divasa*) *Tritiya* in K.Y. 5010, A.D. 1909-10, we proceed as follows:—

Mâgha new moon, A.D. 1910 (Table X) ...	February	9·5296 d.
Duration of 18 tithis (Table II or Eye-table) ...		17·7183 d.
		<hr/>
Mâgha 3 <i>badi</i> , i.e., end of 18th tithi ...	February	27·2479 d.
		<hr/>

The *mean* tithi in question ended at ·2479 of the 27th day of February, A.D. 1910.

34. For the *actual* ending moment of the tithi, we add the equations of sun's and moon's anomalies.

Anomaly at new moon.			
☉	☾		
302·58 d.	22·161 d.	A.D. 1910, February	27·2479 d.
Add for 18 tithis 17·72 d.	17·718 d.	☉Eq. for 320·30 d = +·1491 d.	
		☾Eq. for 12·473 d = —·1332 d.	
<hr/>	<hr/>	<hr/>	
320·30 d.	39·879 d.		
Deduct	27·555 (1 anom. month.)		+·0159 d. +·0159 d.
	<hr/>		<hr/>
	12·324 d.		27·2638 d.
	+·1491 (☉'s equation.)		
	<hr/>		
	12·473		

27·2638 d. or, in ghaṭikas and palas, 15 ghaṭikas 50 palas after mean sunrise on 27th February 1910. This is the absolute ending moment of Magha *badi* 3, in K.Y. 5010.

CHAPTER VI.

NAKSHATRAS.

35. The system of quoting dates by Nakshatras is as old as that of quoting by tithis and has prevailed in India from equally ancient times. There are twenty-seven nakshatras or lunar mansions through which the moon passes in her monthly journey

* That is, on the *amanta* system or the system of reckoning lunar months from New Moon to New Moon. There is also another system, prevalent in certain parts of India, of reckoning the lunar months from Full Moon to Full Moon, hence called the *puṇimanta* system. On this system, which in all probability was more widely current formerly than it is now, the New Moon is at the middle of a lunar month and the two halves of each month are properly designated its two *pakshas* or wings, one on either side of new moon. Also, the new moon at the end of the *amanta* Chaitra lunar month, for instance, would, on the *puṇimanta* system, be properly called the "Vaisakha new moon." As explained elsewhere, it is sometimes a difficult question whether a lunar month, referred to in an inscription, is to be understood in the *amanta* or in the *puṇimanta* sense. See Sections 107 to 111 *infra*.

through the stars. For purposes of astronomical computation, the moon is supposed to spend an equal amount of time in each of the 27 nakshatras ; and as the total period of the moon's journey through the stars occupies 27·32166 days, it follows that the mean duration of each nakshatra is $\frac{27·32166}{27} = 1·01191$ days, *i.e.*, 1 day and nearly 18 minutes. Thus, if we know the ending moment of a particular nakshatra, all we have to do to find out the ending moment of the next nakshatra, or, for that matter, of any other nakshatra, is to add as many times 1·0119 days as there are nakshatras between the ending moment which we know and the ending moment which we wish to find out. Having found this ending moment, we have next to add or subtract the moon's equation of time according to her anomaly at the ending moment of the nakshatra. We should remember that the sun's anomaly and the sun's equation of time do not enter into the calculation of the ending moment of nakshatras, because we are now concerned with the moon's own journey among the stars and not with the space gained by her over the sun.

36. When all we wish to know is the nakshatra for a particular tithi we may ascertain this directly from the mean tithi. The mean tithi, as we know, gives us the moon's longitude *minus* the sun's longitude. If to any tithi, therefore, we add the sun's longitude, we shall get the moon's longitude and this will enable us to find out the nakshatra corresponding to the longitude. The sun's longitude for nakshatras for every whole day of the solar year is given in the last column of the calendar (Table VIII); while the sun's longitude for decimals of a day is given in Table V. (The process of determining the sun's longitude for the purpose of nakshatras consists, briefly, in making 360° equal to 29·53059 day-spaces, and allowing for the *sodhya* of 2·1707 days. This conversion is necessary in order that we may add the moon's *less* the sun's longitude, which is calculated at the rate of 360° for 29·53059 days, to the sun's own longitude). To give an example, supposing we wish to find the nakshatra corresponding to the 27th day of February, A.D. 1910, which we found was the 18th tithi of lunar Mâgha, ending at ·2487 of the day, after sunrise, we proceed to determine the sun's longitude for the nakshatra. From the tithi we know that the sun's longitude for solar anomaly for the tithi is 320·30 days. The corresponding sun's longitude for nakshatra is as follows :—

	For 320 days (according to Table VIII)	25·6960 days.
	For ·30 day (according to Table V)	·0242 „
Add moon's <i>less</i> the sun's longitude, <i>i.e.</i> , the equivalent of 18 tithis in days	17·7183 „	
		43·4385
Deduct the equivalent of 360° of the moon's longitude	29·5306	
		13·9079

We look in Table III for the nakshatra equivalent of 13·9079 days in lunation space. We find this to be number 13, whose longitude extends from 13·12470 to 14·21843. Now, No. 13 nakshatra is called *Hasta*, which is therefore the nakshatra current at the ending moment of our tithi.

37. When we wish to find the *current* nakshatra corresponding to a tithi, the above method may be varied by converting the tithi into degrees at the rate of 12° for each tithi and adding the sun's longitude from Table XVII A and C, as in the example in Sec. **287**.

38. When we wish to find the *ending moment* of a nakshatra, the following method is preferable. This method, which is very simple, is indicated in Table XI which is provided in ghaṭikas and palas as well as in decimals of a day. To use this table, we should know the number of the nakshatra and the number of the new moon which the nakshatra follows, *i.e.*, whether it is the 1st, 2nd, 3rd, or 4th new moon, and so on, and then under the new moon in question we look out the "interval" opposite the number of the given nakshatra. The next step is to deduct from the interval so found the equivalent (according to the Correction Table in Table XI) of the time of occurrence of the first new moon in the Solar Year (given in Table X). The result, added to the date of the New Moon, gives us the mean ending moment of the nakshatra. If we wish to have the absolute ending moment, we take the equation for the nakshatra (Table IX *j* to *l*) corresponding to the moon's anomaly, and if we wish further to have the absolute ending moment in local time, we add or subtract the corrections according to Table XIII for the given latitude and longitude.

39. Suppose we want the ending moment of Nakshatra Mûla in Lunar Kârttika A.D. 1910, we proceed as follows:—

	Days.	C's Anomaly Days.
First New Moon in Solar Year (Table X) ...	25·9134	0·535
Add for Kârttika New Moon (") ...	177·1835	11·856
Add commencement of Solar Year (") ...	April 13·2080	
Days from April 1 A.D. 1909 ...	216·3049	

"Interval" corresponding to No. 19

"Mûla" Nakshatra under Kârttika (No. 7 New Moon)—Table XI ...	Days. 6·1353
--	-----------------

Deduct equivalent of 25·9134 according to the correction table in Table XI.

	Days.			
Equivalent of 25	= 1·8700			
" .91	= .0681			
" .0034	= .0002			
" 25·9134	= 1·9383	— 1·9383		
		+ 4·1970	+ 4·1970	+ 4·197
Days from April 1 ...		220·5019		16·588

Nakshatra equation (Table IX-*k*) for
anomaly of 16·588 days is +·2465 +·2465

220·7484 days from Ap. 1.

That is (by Tables VIII and XIX) 44 ghaṭikas 54 palas after mean sunrise on 6th November, A.D. 1910.

N.B.—For the years A.D. 1840 to A.D. 1919 we can get the ending moment of any Nakshatra yet more quickly from Tables XI and XII in the following manner.—

			days	gh.	palas.				d.	gh.	p.
(Table XII) Kārttika New Moon 1910, November			2	18	18	☾'s Anom.	12	23	28		
			d.	gh.	p.						
Nak. interval No. 19 (Table XI—A, col. VII)			6	8	7						
Deduct for Nak. 1910-11 (Table XII, last col.)			—1	56	18						
			4	11	49	4	11	49	4	11	49
						6	30	7	16	35	17
Nak. Equation for ☾'s Anom. of 16 d. 35 gh. 17 p. (Table IX- <i>l</i>)			+	14	50						
						6	44	57			

The ending moment is Nov. 6, 44 ghaṭikas 57 palas after Ujain sunrise, which only differs by 3 palas from the result above arrived at.

42. If we want this in local time, say at Tanjore (Lat. 11°) we have to add as correction, according to Table XIII [Lat. 11° (Tanjore)—208th day of Hindu Solar Year, on 6th Nov., when the Solar Year commences on 13 April] + 994 seconds of time = 41 palas.

44 ghaṭikas 54 palas + 41 palas = **45 ghaṭikas 35 palas**, after sunrise at Tanjore on **6th November, A.D. 1910.**

This is the absolute ending moment of “Mûla” Nakshatra in Lunar Kârttika A.D. 1910 (Kaliyuga 5011), according to the *Surya Siddhânta*. According to Mr. Srauti's Panchângam, which is based on the Greenwich Nautical Almanac, the absolute ending moment is 52 ghatikas 24 palas and according to the Kanjanur “Panchângam (No. 28)” it is 47 ghatikas 16 palas.

43. Suppose that in the same month we required to know the ending moment of No. 13 "Hasta" Nakshatra, instead of No. 19 "Mûla", we would have to take the "Interval" in Table XI for No. 13 and deduct therefrom the equivalent of 25·9134, *i.e.*, 1·9383, *which is the same for all months and all nakshatras throughout the Solar Year 1910 A.D.* Against No. 13 under the 7th New Moon in Table XI there are two "Intervals", *i.e.*, 0·0638 and 27·3854. We take the second interval as we cannot deduct 1·9383 from the first interval.

Nakshatra Interval.	Days.	☾'s Anomaly.
27·3854	216·3049	0·535
-1·9383 (Annual Nak. Corr.)		11·856
<hr/> 25·4471	+ 25·4471	+ 25·447
	<hr/> 241·7520	<hr/> 37·838
		-27·555 (1 an. month.)
		<hr/> 10·283
Nakshatra equation for ☾'s anom. of 10·283 days (Tab. IX—J.)	-·2915	
	<hr/> 241·4605 days from 1st April, i.e.,	

(by Tables VIII and XIX) 27 ghatikas 38 palas after *mean* sunrise on 27th November, A.D. 1910.

44. Lastly, if we want the ending moment of No. 15 "Svâti" Nakshatra in the same month, we find two "intervals" for No. 15 in Table XI, from each of which 1.9383 can be deducted. In other words, there will be two "Svâti's" in Lunar Kârttika 1910; one about 2.08 *minus* 1.94 or at .14 of a day after new moon and the other at 29.41 *minus* 1.94 or 27.47 days after new moon. The equation for the mean anomaly of the first Svâti will be that for an anomaly of $0.53 + 11.86 + .14 = 12.53$ days : in this case the equation is $-.118$. The absolute ending moment of the first Svâti will be $.305 + .14 - .118 = .327$ or $19\frac{3}{4}$ ghaṭikas after *mean* sunrise on the new moon day, *i.e.*, the 216th from 1st April, or 2nd November, A.D. 1910.

The equation for the C's mean anomaly at the ending moment of the second Svâti will be that for $(0.53 + 11.86 + 27.47 - 27.55) = 12.31$ days ; that is, by Table IX-*j*, the equation will be $-.138$.

The absolute ending moment of the second Svâti will then be

$$27.47 - .138 = \frac{216.3049}{+27.332}$$

243.6369 days from April 1,

i.e., (by Tables VIII and XIX) $38\frac{1}{4}$ ghaṭikas on 29th November, A.D. 1910.

This is midway between Mr. Srauti's time ($36\frac{3}{4}$ ghaṭikas) and the "Kanjapur" time (41 ghaṭikas) for the nakshatra in question.

N.B.—We have not corrected our result for local time.

45. Besides the system of the division of the moon's path among the stars into 27 equal nakshatra spaces, there are two others, called Garga's system and Brahma's system, by which the sidereal month of 27.32166 days is divided into 27 convenient but *unequal* stages. Our Table III gives the collective duration of the nakshatras according to the unequal systems, and the ending moment of each nakshatra according to either of these systems can be found by adding the corresponding collective duration to the ending moment of the last Nakshatra Revati, which should be first determined. We have also given in Table III the *us* of the deities presiding over the several nakshatras.

46. It is sometimes found that an extra Nakshatra *Abhijit* is interpolated between Nos. 21 and 22. Its duration is shown in Table III in the column dealing with "Brahma's System".

CHAPTER VII.

YOGAS.

47. A yoga is the time during which the sun and moon together accomplish 13 degrees 20 minutes of space. There are thus 27 yogas which together make 360° . The names of all the yogas are given in Table III, from which it will be seen that the collective duration of 27 yogas is 25.42022 days.

48. Unlike tithis and nakshatras, the yogas do not represent the stages of the actual motion of any heavenly body or of a set of heavenly bodies. They are thus the result of a mathematical rather than of an astronomical conception. If we draw a line

$$\frac{1}{b} \text{-----} \frac{1}{a}$$

where *a* represents the motion of the moon in a given time and *b* the motion of the sun in the same time, it follows that $a-b$ is the moon's elongation or the space gained by the

moon over the sun in the given time. If we regard separately the spaces travelled by the sun and the moon in this time, we might say that together they have done $a+b$. This $a+b$, then, is the yoga, while $a-b$ is the tithi. To derive the yoga from the tithi, we make use of the formula

$$a-b+2b=\text{Yoga.}$$

just as we derived the nakshatra from the tithi by means of the formula $a-b+b$. (Sec. 36 *supra*.)

49. Supposing we want to determine the yoga current at the ending moment of the tithi for 27th February 1910, we proceed as follows. We have found *supra* (Sec. 33) that the 18th tithi ended at 2479 day on 27th February, 1910, and that the corresponding solar day was 320.30 days, while the corresponding moon's anomaly was 12.324 days.

In accordance with the formula $a-b+2b$, we add twice the sun's longitude to the tithi.

The sun's longitude for 320.30 days is calculated as follows:—

For 320 days (last column of Table VIII)	...	25.6960
For .30 day (Table V, sun's longitude)	...	.0242
		<hr/>
		25.7202
Multiply this by 2	...	51.4404
Deduct completed lunation	...	29.5306
		<hr/>
		21.9098
Add equivalent of 18 tithis (Table II)	...	17.7183
		<hr/>
		39.6281
Deduct completed lunation	...	29.5306
		<hr/>
		10.0975
The yoga corresponding to this lunation space is the 10th, i.e., <i>Ganda</i> , (Table III) whose space ends at	...	10.9372

This, therefore, was the yoga current at the ending moment of our tithi.

N.B.—Or as in Sec. 37, the sun's longitude may be calculated directly from table XVII A and C thus:—

Sun's longitude for 320 days	...	...	...	...	313.2534°
Do. .30 day	...	...	...	...	.2957
					<hr/>
					313.5491°
Twice ☉'s longitude	...	...	...	...	= 627.0982°
Add tithi × 12	...	...	...	...	= 216°
					<hr/>
					843.0982
Deduct completed circles	...	...	...	...	720°
					<hr/>
☾'s Yoga longitude	...	...	...	...	123.0982

From the Eye-table we see that the current Yoga was *Ganda*.

Easy Method for Yogas.

51. A very simple method of determining the ending moment of any Yoga is indicated in Table XI which is to be used in precisely the same manner for Yogas as for Nakshatras. We proceed to show how Table XI should be used for Yogas for any year, any lunar month, and any yoga. We take the solar year, A.D. 1910-11, the Lunar month *Kārttika*, and Yoga "*Ayushmat*".

For the year 1910-11 A.D., the correction corresponding to 25.9134 (first new moon in solar year) according to the Yoga correction table, is determined as follows:—

Correction corresponding to 25	=	3.4797
" " .91	=	.1267
" " .0034	=	.0005
		<hr/>
		3.6069

In Lunar Kārttika, A.D. 1910, there are two yoga " intervals " for No. 3 " Ayushmat ", from each of which 3·6537 can be deducted. Let us calculate the mean and absolute ending moments of each of these " Ayushmats ".

			Days.	☾'s Anom. Days.
First New Moon in solar year	...	...	25·9134	0·535
Add for Kārttika New Moon (Table X)	...	...	177·1835	11·856
			<u>203·0969</u>	<u>12·391</u>
First No. 3. Yoga : Interval	...	3·8846		
Correction	...	—3·6069		
		<u> </u>		
Net Interval	...	...	+ ·2777	+ ·278
			<u>203·3746</u>	<u>12·669</u>
Commencement of solar year	...	...	Ap. 13·2080	or 12., 40gh., 10 p. ☉'s Eqn. + 7gh. 55p.
			<u>Ap. 216·5826</u>	<u>12d., 48gh. 5p.</u>
			or 216d. 34gh. 57p.	
(1) ☉'s Yoga Equation for Anom. of 203·3746 days, <i>i.e.</i> , 203d., 22gh. is, by Table IX— <i>i</i> , + 7gh., 55p.				
(2) ☾'s Yoga Equation for Anom. of 12d., 48gh. 5p. is, by Table IX— <i>i</i> , —5gh. 10p.				
(3) Sum of ☉'s + ☾'s Equations = 2gh. 45p.			+ 2gh. 45p.	

216d., 37gh. 42p. from 1 April,

i.e. (by Tables VIII and XIX) 37 ghaṭikas 42 palas after mean sunrise on 2 November, A.D. 1910 (Lanka time).

This is the absolute ending moment (according to Sūrya Siddhānta) of the first Ayushmat Yoga in the lunar month of Kārttika, Kaliyuga 5011 (expired).

52. For the second " Āyushmat " yoga of the same lunar month, we proceed as follows :—

	Days	☾'s Anom. Days.
Kārttika New Moon	203·0969	12·381
Net " interval " for No. 3 yoga :— From 29·3048		
Deduct yoga correction for the year	—3·6069	
	<u>25·6979</u>	<u>25·698</u>
	<u>228·7948</u>	<u>38·079</u>
	or 228 d., 47gh. 41p.	<u>27·555</u>
Commencement of solar year April 13·2080 or 13d., 12gh. 29p.		10·524 or
	<u>242d., 0gh. 10p.</u>	<u>10d., 31gh. 30p.</u>
(1) ☉'s Yoga Eqn. (Table IX— <i>i</i>) for 228d., 48gh. is + 5gh. 12p.		Add. ☉'s Eqn. + 5gh. 12p.
		<u>10d., 36gh. 42p.</u>

242d., 0gh., 10p.

(2) By Table IX-*i*, ☾'s Yoga Eqn., for
10d., 36gh., 42p. is—15gh., 8p.

(3) Sum of ☉'s and ☾'s Yoga Equations = — 9gh. 56p.
—9gh., 56p.

241d., 50gh. 14p. from 1 April,

i.e., (by Tables VIII and XIX) 50 ghaṭikas 14 palas after mean sunrise on 27 November, A.D. 1910.

53. For the years A.D. 1840 to A.D. 1919 yogas may be calculated very readily by means of Tables IX-*i*, XI-A, and XII. Thus, for “Vyatīpāta” yoga in April, A.D. 1910 :—

	☉'s An. d. gh. p.	☾'s An. d. gh. p.
Table XII, Chaitra new moon, A.D. 1910, April	9 35 27	361 38 30
	d. gh. p.	d. gh. p.
(Table XI-A, col. XIII, (Chaitra follg. Adhika masa)		
Interval for No. 17 “Vyatīpāta” yoga	17 49 25	
Deduct Yoga correction for the year (Table XII)	1 0 45	
	16 48 40 + 16 48 40	16 48 40
	16 48 40	16 48 40
Tab. IX- <i>i</i> ☉'s Yoga eqn. for 13d. 11g.--8gh. 25p.	26 24 7	378 27 10
	* 365 15 30	† 27 33 20
„ ☾'s Eqn. for 15d. 13gh. 43p. + 7gh. 40p.		13 11 40
Sum of ☉'s and ☾'s Eqns.	—0gh. 45p.	15 22 8
	— 0 45	— 8 25
	April 26 23 22	(☉'s Eqn.)
		15 13 43

That is, “Vyatīpāta” yoga in April 1910 ended at 23 ghaṭikas, 22 palas after mean sunrise on 26 April.

54. Yogas in their astronomical sense are not very much in use at present, but certain astrological *yogas* (Amritayoga, Siddhayoga, Maranayoga) are much more in use, being based on combinations of Nakshatras with certain week-days.

Apart from inscriptions in the Vikrama Era, where yogas are freely cited, one hears of the *yoga* proper in such auspicious combinations as the following :—

Kapilā Shashthī, *i.e.*, the combination of Bhādrapada Krishna Shasthi (in a year in which either Bhādrapada or some previous lunar month is *adhika*) with Nakshatra *Rohinī* and Yoga *Vyatīpāta* on a Tuesday. The combination is proverbially rare and supposed to be very difficult to foresee, but it can be easily predicted by means of the present method. Look in Table X for Bhādrapada mean new moon (in a year having this or some previous month as *adhika*) falling on a Wednesday, mean ending moment being less

* The deduction of the period of an entire solar year is made here.

† The deduction of the period of an entire anomalistic lunar month is made here.

than 50, and calculate *Rohini* Nakshatra and *Vyatîpâta* Yoga for that month. Of course the tithi, the nakshatra, or the yoga *may* fall on Monday or Wednesday, and then there will be no *Kapilâshashti*.

N.B.—In A.D.17, A.D.193, A.D.396, A.D.440.....A.D. 1513 these were *Kapilâshashtis* : none between A.D. 1840 and A.D. 2000. Let the student try A.D. 1736 and A.D. 1787.

Ardhodaya yoga, i.e., a combination on a *Sunday* by day-time, of Nakshatra *Rohinî* Yoga *Vyatîpâta*, and *Mâgha amâvâsyâ* (i.e., the amâvâsyâ at the end of lunar *Mâgha*).

Champa Shashthî, i.e., a combination on a *Sunday* or *Tuesday* of *Mârgasîra* śukla Shashti with Nakshatra *Satabhishaj* and Yoga *Vaidhriti*.

Mahâmahâ Varunî, i.e., a combination of *Phâlguna* krishna trayodaśî with *Saturday* and Nakshatra *Satabhishaj* and Yoga *Subha*.

Dasaharî, i.e., a combination in the forenoon of *Jyeshtha* śukla daśamî with *Wednesday* (or *Tuesday*) and Nakshatra *Hasta* and Yoga *Vyatîpâta*.

Mahâsivarâtri, i.e., *Mâgha* krishna chaturdaśî combining at *midnight* with *Sunday* or *Tuesday* and Yoga *Siva*.

N.B.—See further Chapter XVI below.

CHAPTER VIII.

KARANAS, AHAS AND TYAJYAM.

Karanas.

55. The list of *karanas* is given in Table III. Every tithi is divided into two *karanas*, and the ending moment of the second of every set of two *karanas* coincides with the ending moment of a tithi. For the other *karana* all we have to do is to add half a tithi, 49217 day, to the last mean tithi, as well as to the corresponding solar and lunar anomalies and calculate from these data the absolute ending moment of the *karana*.

Thus on 27 February 1910 the mean tithi (18th) ended at	...	2479 day.
For the 37th <i>karana</i> (<i>Bava</i>) add	... ..	4922
		<hr/> 7401 day

Sun's anomaly	days. 320·30 49	Moon's anomaly	days. 12·324 492
	<hr/> 320·79		<hr/> 12·816
320·79; ☉'s Eqn. +·1501. 12·816 +·150 = 12·966			

☾'s Equation—·0840.

Sum of the equations +·1501—·0840 =	...	...	...	...	+·0661
					<hr/> 8062 day

i.e., the *karana Bava* ended at 48 ghaṭikas 22 palas on 27 February 1910.

56. Properly speaking, two *karanas* ought to be shown in the panchāṅgam, corresponding to every tithi: but the panchāṅgams in practice mark only that *karana* whose ending moment is 30 ghaṭikas or less from sunrise. If the tithi itself ends at 30 ghaṭikas or less from sunrise, the same ending moment is entered in the panchāṅgams against both tithi and *karana*. In the above case, i.e., 27 February 1910, the 36th *karana Vishti* (called *Bhadra* in the Tamil country) will be found marked in the panchāṅgams as having the same ending moment as the tithi.

Ahas and Tyajyam.

57. Having discussed the five component parts of a panchāngam proper, *viz.*, *vāra*, *tithi*, *nakshatra*, *yoga* and *karana*, it remains to notice two other entries usually found in a line with the first five, *viz.*, the *ahas* and the *tyājyam*.

58. The *ahas* or duration of daylight is simply the normal period of daylight in India, *viz.*, twelve hours or 30 ghaṭikas, with the corrections for sunrise and sunset, deduced according to the rules to be presently laid down (Chapters IX and XI). Thus, if on a particular day the sun rose at 5-25 a.m. and set at 6-20 p.m. the *ahas* would be 12 hours + 35' + 20' = 12 hours 55 minutes, or 32 ghaṭikas 18 palas. (Tables XX and XIX.)

59. The *tyajyam* (lit., portion to be abandoned for purposes of business) is a definite portion of the total duration of each *nakshatra*, which portion is considered inauspicious. If the *tyajyam*, always reckoned from the first moment of each *nakshatra*, ends by day, it is called a day-tyājyam, and if it ends by night, it is called a night-tyājyam, and in the latter case it is usual to deduct the *ahas* and state that the *tyājyam* ends so many ghaṭikas and palas after sunset.

60. The following are the fractional parts which are *tyājyam* for the several *nakshatras* :—

Tyajyam.

1 Asvini (five-sixths) $\frac{5}{6}$	16 Visakha (seven-thirtieths) $\frac{7}{30}$
2 Bharani (two-fifths) $\frac{2}{5}$	(Tam. Visakam)
3 Krittika (one-half) $\frac{1}{2}$	17 Anuradha (one-sixth) $\frac{1}{6}$
(Tam. Kiruttigai)	(Tam. Anusham)
4 Rohini (two-thirds) $\frac{2}{3}$	18 Jyeshtha (seven-thirtieths) $\frac{7}{30}$
5 Mrigasira (seven-thirtieths) $\frac{7}{30}$	(Tam. Kettai)
(Tam. Mirugasiram)	19 Mula (one-third) $\frac{1}{3}$
6 Ardra (seven-twentieths) $\frac{7}{20}$	(Tam. Mulam)
(Tam. Arudra or Tiruvadira)	20 Purva Ashadha (two-fifths) $\frac{2}{5}$
7 Punarvasu (one-half) $\frac{1}{2}$	(Tam. Puradam)
8 Pushya (one-third) $\frac{1}{3}$	21 Uttara Ashadha (one-third) $\frac{1}{3}$
(Tam. Pusam)	(Tam. Uttiradam)
9 Aslesha (eight-fifteenths) $\frac{8}{15}$	22 Sravana (one-sixth) $\frac{1}{6}$
(Tam. Ayilyam)	(Tam. Tiruvonam)
10 Magha (one-half) $\frac{1}{2}$	23 Sravishtha or Dhanishtha (one-sixth) $\frac{1}{6}$
(Tam. Magham)	(Tam. Avittam)
11 Purva Phalguni (one-third) $\frac{1}{3}$	24 Satabhisaj or Satataraka (three-tenths) $\frac{3}{10}$
(Tam. Puram)	(Tam. Sadayam)
12 Uttara Phalguni (three-tenths) $\frac{3}{10}$	25 Purva Bhadrapada (four-fifteenths) $\frac{4}{15}$
(Tam. Uttaram)	(Tam. Purattadi)
13 Hasta (eleven-thirtieths) $\frac{11}{30}$	26 Uttara Bhadrapada (two-fifths) $\frac{2}{5}$
(Tam. Hastam)	(Tam. Uttirattadi)
14 Chitra (fourteen-fifteenths) $\frac{14}{15}$	27 Revati (one-half) $\frac{1}{2}$
(Tam. Chittirai)	
15 Svati (seven-thirtieths) $\frac{7}{30}$	

N.B.—Authorities differ as to the *tyajyam* for certain of the *nakshatras* : for instance, Mr. Sranti has informed the author that his *tyajyams* for *nakshatras* Nos. 13, 14, and 19 are $\frac{7}{20}$, $\frac{1}{3}$, and $\frac{14}{15}$ (instead of $\frac{11}{30}$, $\frac{14}{15}$, and $\frac{1}{3}$) respectively.

61. The method of working out the *tyājyam* is simple. We take the total duration of each *nakshatra* from the ending moment of the previous *nakshatra* up to its own ending moment and cut off the *tyājyam*.

Thus, according to the table in section **175** on 12 July, 1910, Nakshatra Uttara Phalguni ended at Madras at 51 ghaṭikas 50 palas.

On 13 July 1910, the next Nakshatra Hasta ended in the same latitude at 56 ghaṭikas 30 palas.

The total duration of the Nakshatra Hasta was, therefore, 64 ghaṭikas 40 palas.

The *tyājyam* for Hasta is $\frac{11}{30}$

Now, $\frac{11}{30}$ of 64 ghaṭikas 40 palas = $11 \times (2 \text{ ghaṭikas } 9 \text{ palas}) = 23 \text{ ghaṭikas } 39 \text{ palas}$.

∴ The *tyājyam* for Nakshatra Hasta ended on

12 July 1910, 51 ghaṭikas 50 palas

+ 23 ghaṭikas 39 palas

13 July 1910, 15 ghaṭikas 29 palas, which was a day *tyājyam*.

Again, on 20 July 1910, Nakshatra Mūla ended at 31 ghaṭikas 56 palas.

On 21 July 1910, Nakshatra Pūrva Ashādhā ended at 35 ghaṭikas 36 palas.

∴ Total duration of Pūrva Ashādhā was 63 ghaṭikas 40 palas,

of which the *tyājyam* was $\frac{2}{5}$, i.e., $2 \times (12 \text{ ghaṭikas } 41 \text{ palas}) = 25 \text{ ghaṭikas } 28 \text{ palas}$.

∴ *Tyājyam* for Mūla ended on 20 July 1910 at 57 ghaṭikas 24 palas ;

which, being night-time, we deduct the *ahas*, 31 ghaṭikas 27 palas (arrived at in accordance with subsequent rules regarding sunrise and sunset) ;

∴ *Tyājyam* ended at 25 ghaṭikas 57 palas after sunset on 20 July 1910, and was a night *tyājyam*.

Our *tyājyam* will, of course, differ from that entered in other panchāngams exactly in proportion to the difference between our ending moment and that of other panchāngams for Nakshatras.

CHAPTER IX.

SUNRISE.

62. As explained in sections **130, 131**, Part II "Use of the Tables", all Indian time is reckoned, in the first instance, from Lankā sunrise, and corrections are then applied so as to arrive at the time reckoned from local sunrise. These corrections are three in number :—

- (1) A correction for terrestrial longitude ;
- (2) A correction for equation of time ;
- (3) A correction for the sun's tropical longitude.

63. To understand the nature of these corrections, we shall give in popular language the astronomical theory of local time, as applied by Indian Astronomers.

- (1) CORRECTION FOR TERRESTRIAL LONGITUDE.—If the sun moved uniformly along the celestial equator, all places on earth would have sunrise at exactly 6 a.m., local time. On this supposition local time for any moment of the day could be deduced from Lankā time by adding or subtracting four times as many

minutes of time as there are degrees of longitude between Lankâ (or Ujjain) and the given place. The longitude of Ujjain being 76° East of Greenwich, any place whose longitude is more than 76° from Greenwich has a positive correction, and any place whose longitude is less than 76° has a negative correction for terrestrial longitude. For example : the longitude of Madras being $80\frac{1}{2}^\circ$ East of Greenwich, *i.e.*, $4\frac{1}{2}^\circ$ more than Ujjain, local time at Madras is obtained from Lankâ time by adding $4\frac{1}{2}^\circ \times 4' = 18$ minutes of time.

N.B.—A meridian of terrestrial longitude makes a revolution of 360° in 24 hours, that is, it revolves 1° in $24 \times 60 \div 360 = 4$ minutes. This interval of 4 minutes may be called the *time-difference* corresponding to a degree of terrestrial longitude.

The TIME-DIFFERENCE or correction for terrestrial longitude for nearly 200 important places in India (their importance being gauged by their population according to the Census Report of 1901) is given in Table XIII-A, pages 189, 190. The correction is given in seconds of time which can be converted into *palas* or *vinadis* by simply dividing the correction by 24.

(2) CORRECTION FOR EQUATION OF TIME.—The sun does not move uniformly throughout the year, as we know from Table IX-c and Table XVII-A. Hence, for each day of the solar year, we have to apply a correction which depends on the day's equation of the centre. The correction for each day of the solar year on account of the equation of time is given in Table XIII and it is expressed, like the first correction, in seconds of time.

(3) CORRECTION FOR THE SUN'S TROPICAL LONGITUDE.—The sun does not move along the equator, as in our first supposition, but along the ecliptic; and therefore it is only at the points where the ecliptic cuts the equator, *i.e.*, at the moments of vernal and autumnal equinox that the first supposition holds good. At other times of the year, a correction has to be applied, depending on the sun's tropical longitude, *i.e.*, on his distance from either equinox measured along the ecliptic.

64. Now, how are we to determine the sun's tropical longitude? The longitude that is given by the day of the Indian solar year is a sidereal longitude, *i.e.*, the longitude of the sun measured from a fixed point of the ecliptic, which fixed point was the true vernal equinox about A.D. 500 or Kaliyuga 3600. Every year since then, the vernal equinox has been moving further and further away from that fixed point, and the sun's tropical longitude for any year subsequent to 3600 Kaliyuga must be found by adding to his sidereal longitude 3 degrees for every subsequent period of 200 years.* In this portion of our treatise degrees are always converted into days, and for the purpose of Sârya Siddhânta tithis, the tropical longitude for any day in any year is determined by adding to the day of the solar year 1 day for every 64 years expired since 3740 Kaliyuga (A.D. 639). Other Siddhântas give the precession as 1 day for every 60 years, which is more correct than 1 day for every 64 years (see Sec. 277).

[65. By reckoning 3740 Kaliyuga and not 3600 Kaliyuga as the date of coincidence of the sidereal and tropical longitude, we eliminate the Sodhya of 2.1707 days (Surya Siddhanta); otherwise we would have to deduct the Sodhya from the day of the solar year in order to arrive at the sidereal longitude and then add to the sidereal longitude so arrived at as many days as there were periods of 64 years since 3600 Kaliyuga. ($2.1707 \times 64 = 139.9248$, which is nearly 140.)

* This is the correction for precession of equinoxes. The addition to be made to Indian sidereal longitudes on account of the precession of equinoxes is given in degrees in sec. 284 under "Platnetary Chronology" for various epochs from A.D. 520 to A.D. 2051.

66. The present is perhaps the best occasion in a popular work of this description for explaining what is meant exactly by the *Sodhya* when applied to the sun's sidereal longitude. The sun's equation of the centre, according to Table XVII-A on 0 day of the solar year, is $+2.1378$ degrees, which, by Table VII (b) is the sun's motion for 2.17 days.

In other words, when the mean sun is at 0 day of the solar year, the actual sun has already done 2.17 days journey of his annual course. Therefore, whenever we wish to express in days the sidereal longitude of the true or actual sun, *i.e.*, his distance from the position he occupied on 0 day of the mean solar year, we deduct the *Sodhya* of 2.1707 days from the day of the solar year we are at.

67. For the year A.D. 1919 the tropical longitude is found by adding to the day of the Solar Year $\frac{1919-639}{64} = \frac{1280}{64}$, *i.e.*, exactly 20 days, and this addition holds good for 64 years, *i.e.*, for 32 years before and 32 years after A.D. 1919 or from A.D. 1887 to A.D. 1951. In Table XIII the correction for Tropical longitude which applies to the year A.D. 1919 is assumed to apply to the whole period of 80 years from A.D. 1840 instead of only to the period of 32 years from A.D. 1887. There is no great error in this assumption.

68. For 30 important places in India, including one for every degree of N. Latitude between 8° and 35° , and also Calcutta and Bombay which are dealt with separately at pp. 183 to 188, the total of all the three corrections is given in Table XIII for each day of the solar year. Further, the same table gives the equivalence of English and Indian solar dates for all solar years which commence on the 13th April; for other years we must make a *deduction* or *addition* according as the Indian solar year in question commenced *after* or *before* 13th April.

69. With these elementary notions on Time, we are ready to work out quite accurately (according to the *Siddhântas*) any problem in local time. We shall work out, by way of illustrations, the somewhat formidable array of problems which are presented in Professor Jacobi's learned article in Vol. II of the *Epigraphia Indica*.

(i) Kaliyuga 4128; 4 Bhâdrapada (Bengal solar month); place RATNAGIRI, 17° N. Lat.)

Correction (1) for terrestrial longitude; -34 vinadis. (We do not use this correction.)

Correction (2), equation of time: for 4 Bhâdrapada, *i.e.*, the 129th day of solar year, in 17° lat. $+425$ seconds.

Correction (3), tropical longitude for Kaliyuga 4128, 4 Bhâdrapada: the number of days to be added to 129 is $\frac{4128-3740}{64} = \frac{388}{64} = 6$. Now, $129+6$ being 135, it follows that

correction (3) is that for the 135th day, 17° N. Lat., *i.e.*, $+746$ seconds.

Total of the corrections (2) and (3) is $+425 + 746 = +1171$ seconds $= \frac{1171}{24}$ or 49 vinadis.

N.B.—Corrections (2)+(3) are sufficient for determining local sunrise: in this case the result " $+49$ vinadis" means that on the day in question the sun rose at Ratnagiri 49 vinadis or 20 minutes before 6 a.m. [Result arrived at by Professor Jacobi, 50 vinadis which is also 20 minutes of time.]

(ii) Kaliyuga 4325, 4 Mârgaśira (Bengal solar month), SRINAGAR, latitude 34° .

Correction (1): -8 vinadis. (We do not use this correction.)

Correction (2): $+437$ seconds (220th day.)

Correction (3): For $220 + \frac{4325-3740}{64} = 220 + \frac{585}{64} = 220 + 9 = 229$ days,
the correction is -2248 seconds.

Total of corrections (2) and (3): $+437 - 2248$ sec. $= -1811$ seconds $= -75$ vinadis.
[Professor Jacobi arrives at the result -74 vinadis.]

(iii) Kaliyuga 4128 ; 7 Jyeshtha (Bengal solar month); ALIGARH, latitude 28° .

Correction (1), $+14$ vinadis. (We do not use this correction.)

Correction (2), -291 seconds (37th day).
Correction (3), $+2576$ seconds (43rd day). $\left\{ \begin{array}{l} \text{Total of corrections (2)+(3): } +2285'' \\ = 95 \text{ vinadis (94 vinadis according} \\ \text{to Professor Jacobi).} \end{array} \right.$

(iv) Kaliyuga 3585 ; Āshāḍha *sukla* 12 (lunar month), ERAN, 24° N. Lat.
See PART III, sec. 261, p. (92) of the text.

70. The reader should note carefully when the total of all *three* corrections should be used and when the total of corrections (2) and (3) will suffice. When we merely want to know by how many seconds *local* sunrise preceded or followed 6 a.m., we should simply add up the second and third corrections, for here there is no need to consider the effect of terrestrial longitude. If the total correction is positive, sunrise precedes 6 a.m.; if the total correction is negative, sunrise is later than 6 a.m. The first three examples above illustrate this aspect of the problem.

When we want to know how many seconds should be added to or deducted from the ending moment of a *tithi* or *nakshatra*, of which we already know the Lankā time, *i.e.*, the time relatively to Lankā sunrise, we should sum up all *three* corrections, and if the sum is positive we should add it to Lankā time, while if the sum is negative it should be subtracted from Lankā time.

For examples, see the tables for determining the local Madras time of the ending moments of 30 tithis and 27 nakshatras in sections **167** and **175**, Part II *infra*.

CHAPTER X.

LAGHNA.

71. Closely analogous to the calculation of sunrise is that of the *laghna*, *i.e.*, the portion of the ecliptic which appears at the eastern horizon at a *particular moment of the day*. At other times we might require to know the moment of the day when a *particular portion of the ecliptic* will be *laghna*. An example of the first kind of problem is :—

“What is the laghna at the moment of a person’s birth”?

N.B.—The portion of the ecliptic which is *laghna* or “*ent*” at the horizon at any given moment is ordinarily referred to as “the *laghna*”.

An example of the second problem is :—

“At what moment of a day, suitable for marriage, will a particular sign of the zodiac be laghna, so that the hour as well as the day most suitable for marriage may be determined”?

The best exposition of the Laghna is that given by Professor Jacobi at pp. 189, 190 of the *Indian Antiquary* for 1900, Vol. XXIX. A slight adaptation of Professor Jacobi’s rules will be necessary to suit our Sunrise Table XIII.

72. The Rules are :—

- (1) Calculate the time-difference for the interval of space between the sun and the portion of the ecliptic which is *laghna*.
- (2) Apply the necessary corrections for tropical longitude.

73. *Problem I.*—At how many *ghatikas* and *palas* after sunrise was the 165th degree of the ecliptic (*i.e.*, the 15th degree of the sign *Kanya vide* Eye-table—) *laghna* on the 6th *Jyeshtha* (Bengal solar month) in Kaliyuga 4000, Latitude 20° North? By Table VIII, the end of 6th solar *Jyeshtha* was $\cdot 60 + 30\cdot 93 + 6 = 37\cdot 53$ days from the first day of the solar year.

(*N.B.*—We add $\cdot 60$ on account of the commencement of the solar year according to Table X—*Surya Siddhanta*).

Now, the sidereal longitude corresponding to any day of the solar year is found from Tables XVII-A and XVII-C (Tables, p. 207 208) thus :—

☉'s Long. for 37 days of the solar year (Table XVII-A).	34° 32'
☉'s Long. for $\cdot 53$ day (Table XVII-C)	... .. 52'
	<hr/> 34° 84'

For the present purpose we take the nearest whole degree, *i.e.*, 35 degrees.

The interval in space between 35° and 165° = 130°.

Now 360° of the ecliptic rise above the horizon in 1 day or 60 *ghatikas*.

$$\therefore 130^\circ \quad \dots \quad \dots \quad \dots \quad \frac{130 \times 60}{360} = 21 \frac{2}{3} \text{ ghatikas}$$

$$= 21 \text{ ghatikas } 40 \text{ palas.}$$

In other words, the 165th degree of the ecliptic was *laghna* about 21 *ghatikas* 40 *palas* after sunrise on the day in question.

74. Next, we proceed to apply the corrections for tropical longitude.

The difference between the tropical and sidereal longitude of the sun for the year 4000 Kaliyuga = $\frac{4000 - 3740}{64} = 4$ days. Now $37\cdot 53$ days + 4 days = $41\cdot 53$ days.

The correction for the tropical longitude of the sun is that pertaining to the 41st day in Table XIII, p. 165, under latitude 20°, *i.e.*, + 1865 seconds.

For the correction for tropical longitude of the *laghna*, *i.e.*, sidereal 165° of the ecliptic in Kaliyuga 4000 we have to determine the day when the sun accomplishes 165° of the ecliptic, which is determined as follows from Tables XVII-A and XVII-C :—

$$\begin{array}{rcl} \text{(Table XVII-A) 169 days} & = & 164\cdot 43^\circ \\ \text{(Table XVII-C) } \cdot 58 \text{ day} & = & \cdot 57^\circ \\ \hline & & 169\cdot 58 \text{ days} = 165^\circ \end{array}$$

We add 4 days to 169·58 days for tropical longitude in the year 4000 Kaliyuga. Total 173·58 or 174 days.

The correction for tropical longitude corresponding (in Kaliyuga 4000) to sidereal 165°, or tropical 174 days, is, + 151 seconds.

We add this correction *with the sign reversed* to the first :—

$$+ 1865 - 151 = 1714 \text{ seconds} = + 72 \text{ palas.}$$

Adding this correction to the approximation first arrived at, we have

$$\begin{array}{r} 21 \text{ ghaṭikas } 40 \text{ palas.} \\ + 1 \text{ ghaṭika } 12 \text{ palas.} \\ \hline 22 \text{ ghaṭikas } 52 \text{ palas.} \end{array}$$

This was the moment (according to Professor Jacobi, *loc. cit.*) when the 165th degree of the ecliptic was *laghna* on the day in question.

N.B.—*Firstly*, we had to convert 165° of the ecliptic into days in order to apply Table XIII, which expresses the various portions of the ecliptic as days of the solar year.

Secondly, we reversed the sign of the correction in the case of the *laghna* because what we wanted was the difference between the corrections on account of the tropical longitude of the sun and of the *laghna* respectively.

75. Second Problem.—"What portion of the ecliptic was *laghna* on the same day at 20 ghaṭikas after sunrise" ?

We have seen that the Solar 6th Jyeshṭha corresponds to 35° sidereal longitude.

Now, a time-difference of 20 ghaṭikas answers to an interval in space of $20 \times \frac{360}{60} = 120$ degrees.

∴ The portion of the ecliptic which was *laghna* at 20 ghaṭikas after sunrise was (*roughly*) $120^\circ + 35^\circ = 155^\circ$ or the 5th degree of the 6th sign *Kanya* (*vide* Eye-table for the longitude corresponding to the different Râṣes).

This is enough for all ordinary calculations of *laghna*.

If we wish to be quite accurate, we proceed as follows. The correction for tropical longitude of the sun on the day in question was, as we have seen, + 1865 seconds.

The correction for the tropical longitude of the *laghna*, i.e., 155° of the ecliptic must be found by applying Tables XVII-A and XVII-C.

$$(\text{Table XVII-A}) \quad 159 \text{ days} = 154.57^\circ$$

$$(\text{Table XVII-C}) \quad .44 \text{ day} = .43^\circ$$

$$\hline 159.44 \text{ days} = 155.00^\circ$$

$$\text{Add for tropical longitude} \quad 4 \text{ days}$$

$$\hline 163.44 \text{ days.}$$

The correction for tropical longitude pertaining to the 20th degree of latitude and the 163rd day (in Kaliyuga 4000) is (by Table XIII) + 333 seconds.

We add this *with sign reversed* to the first correction :

$$+ 1865 - 333 = + 1532 = + 64 \text{ palas.}$$

In other words, on the day in question, the 155th degree of the ecliptic was *laghna* at 20 ghaṭikas *plus* 64 palas.

We want, however, the degree of the ecliptic which was *laghna* at exactly 20 ghaṭikas after sunrise.

76. The annexed small table adapted from Prof. Jacobi's Table of *udayāsus* in Vol. I, *Ep. Ind.*, enables us to accomplish this stage of the problem.

We learn from this table that in the 20th degree of latitude the 6th sign of the zodiac (Kanya, with which we are concerned) takes 257 seconds to rise *one* degree above the horizon.

∴ 64 palas or 1532 seconds are taken to rise $\frac{1532}{257} = 5.9611^\circ$
or (by Table XX) 5 degrees 57 minutes 40 seconds,
or nearly 5 degrees 58 minutes.

In other words, we should deduct 5 degrees 58 minutes from 155° in order to know which portion of the ecliptic was *laghna* at exactly 20 ghaṭikas after sunrise on the day in question.

The portion in question was 155° minus 5 degrees 58 minutes = 149 degrees 2 minutes, which is exactly the result arrived at by Professor Jacobi.

TABLE.

Time (in seconds) taken by a Degree of the Ecliptic to rise above the Horizon.

DEGREES OF TERRESTRIAL LATITUDE FROM 8° TO 35° .

Signs of the Zodiac.	Degrees of Ecliptic.			8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°
I	$0^\circ - 30^\circ$	XII	$330^\circ - 360^\circ$	210	208	206	204	202	201	199	197	195	194	192	190	188	186
II	$30 - 60$	XI	$300 - 330$	229	227	226	224	223	221	220	218	217	215	214	212	211	206
III	$60 - 90$	X	$270 - 300$	253	253	252	252	251	251	250	250	249	248	248	247	246	249
IV	$90 - 120$	IX	$240 - 270$	263	263	264	264	265	266	266	267	267	268	269	269	270	270
V	$120 - 150$	VIII	$210 - 240$	250	251	253	254	256	257	259	260	262	263	265	266	268	269
VI	$150 - 180$	VII	$180 - 210$	...	...	239	241	243	244	246	248	250	252	254	255	257	259

Signs of the Zodiac.	Degrees of Ecliptic.			22°	23°	24°	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°
I	$0^\circ - 30^\circ$	XII	$330^\circ - 360^\circ$	184	182	180	178	176	174	172	170	168	165	163	161	159	157
II	$30 - 60$	XI	$300 - 330$	208	206	204	203	201	199	197	196	194	192	190	188	186	184
III	$60 - 90$	X	$270 - 300$	245	244	244	243	242	242	241	240	239	238	238	237	237	236
IV	$90 - 120$	IX	$240 - 270$	271	273	273	274	274	275	275	276	277	277	278	278	279	280
V	$120 - 150$	VIII	$210 - 240$	270	272	274	276	278	279	281	283	285	287	289	291	293	295
VI	$150 - 180$	VI	$180 - 210$	261	263	265	267	269	271	273	275	278	280	282	284	286	288

CHAPTER XI.

SUNSET.

77. The considerations to which we have introduced the reader in dealing with Sunrise and Laghna will enable him to deal also with *sunset*, which is only the supplement (in the language of geometry) of *sunrise*.

Supposing the sun is at a point of the ecliptic whose tropical longitude is 100° , then we have to consider at sunrise how long, relatively to the mean sun on the equator, the mean sun on the ecliptic takes to rise 100° , and at sunset we have to consider how long, relatively to the mean sun on the equator, the mean sun on the ecliptic takes to fall 80° . [see Sec. 63 (3)]

78. Accordingly, to determine the moment of sunset by local time, we should take the sum of (1) the correction for equation of time, which is the same or nearly the same as for sunrise, and (2) the correction for tropical longitude, which will be the supplement of the tropical longitude for sunrise. The supplement of an angle is the difference between it and 180° . In our sunrise tables, degrees are expressed as days and by Tables XVII-A and XVII-C, $180^\circ = 184.80$ days or in round figures 185 days.

79. What we have to do, therefore, to determine the second correction for sunset is to find the difference between the day of the solar year under consideration and 185 days, and take the correction for tropical longitude for the day so arrived at. If the solar day we are considering exceeds 185 days, the sign of the tropical longitude for the difference will remain unchanged: otherwise the sign should be reversed. This correction should then be added to the equation of time in order to determine the interval between sunset and 6 p.m. local time, while the total so arrived at should be added again to correction (1) adverted to in sec. **63**, *i.e.*, the correction for terrestrial longitude, in order to arrive at the interval between 6 p.m. *Lankâ* time and *local* sunset.

80. In the absence of any other standard authorities on the subject, we may compare our calculations of sunset for A.D. 1910-11 with those given in the Kumbakonam Mutt Panchāṅgam, edited by Mr. Viśvanātha Srauti, B.A.

Latitude 11° N. (Tanjore).

Date by European Calendar as well as by Tamil Solar Year <i>Sādhārana</i> , A.D. 1910.	Day of Solar Year according to Table XIII.	Equation of Time in Seconds by Tab. XIII under Lat. 11° for the day of Solar Year entered in col. 2.	Supplement to Trop. longitude in Days (<i>i.e.</i> , difference between col. 2 increased by 20 and 185 days).	Correction for Trop. Longitude acc. to Tab. XIII for the Supplemental day arrived at in column 4 (sign to be re- versed if neces- sary).	Sum of Correc- tions arrived at in columns 3 and 5.	Moment of Sunset according to col. 6.	Sunset accord- ing to Mr. Srau- ti's Pan- changam for 1910.
1	2	3	4	5	6	7	8
						P.M.	P.M.
Chittirai 1 (Ap. 13) ...	1	- 435"	164th day	- 22"	- 457" = - 7'	6-7	6-7
Vaikasi 2 (May 15) ...	32	- 352"	133rd day	- 312"	- 664" = - 11'	6-11	6-11
Ani 3 (Je. 16) ...	65	- 147"	100th day	- 986"	- 1133" = - 19'	6-19	6-19
Adi 3 (Jl. 18) ...	97	+ 163"	68th day	- 1469"	- 1306" = - 22'	6-22	6-23
Avani 4 (Au. 19) ...	129	+ 411"	36th day	- 1168"	- 757" = - 13'	6-13	6-14
Purattasi 5 (S. 20) ...	161	+ 515"	4th day	- 144"	+ 371" = + 6'	5-54	5-55
Aippasi 6, (O. 22) ...	192	+ 494"	27th day	+ 969"	+ 1463" = + 24'	5-36	5-36
			(212 - 185 = 27)				
Kartigai 8 (N. 23) ...	224	+ 353"	59th day	+ 1523"	+ 1876" = + 31'	5-29	5-30
Margali 3 (D. 17) ...	249	+ 140"	84th day	+ 1278"	+ 1418" = + 23'	5-37	5-37
Tai 21 (F. 3) A.D. 1911 ...	296	- 268"	133rd day	+ 312"	+ 44" = + 1'	5-59	6-1
Panguni 2 (Mr. 15) A.D. 1911 ...	337	- 421"	172nd day	+ 12"	- 409" = - 7'	6-7	6-8

81. We observe (1) that sufficiently accurate results can be obtained by taking whole days instead of days and fractions of days in columns 2 and 4 *supra*; in other words, it is not necessary to calculate the day of the solar year with exactitude as we did for Problem I under "**Laghna**", (2) that a *positive* correction in column 6 re-appears in column 7 as a *deduction* from 6 p.m., while a *negative* correction in column 6 re-appears in column 7 as an addition to 6 p.m.

Supposing a birth took place 2 hours after sunset on 13 April, 1910, the moment of birth would be 6 p.m. + 2 hours + 7' = 8-7 p.m. In this case sunset was 6-7 p.m. On the other hand, if a birth took place 2 hours after sunset on 23 November, 1910, then the correction for sunset being + 31', the local time at which the birth took place would be 6 p.m. + 2 hrs. - 31' = 7-29 p.m. In this case sunset was at 5-29 p.m.

CHAPTER XII.

ECLIPSES.

82. Eclipses are a most valuable and unerring historical record, and eclipses are freely cited in Indian historical documents. Accordingly, the date of occurrence of solar and lunar eclipses has been indicated in Tables X and XII by means of the symbol ● for solar eclipses and ○ for lunar eclipses. A solar eclipse can occur only at new moon and a lunar eclipse can occur only at full moon, and as full moons are not specially indicated in Tables X and XII, every lunar eclipse is shown merely as occurring in a particular lunar month. The actual date of a lunar eclipse can be found by working out the exact ending moment of the full-moon tithi, *i.e.*, *panchadasî* or *pournamî*. For this, of course, it will be necessary to add the collective duration of 15 tithis, *i.e.*, 14.76 days (Eye-table), to the mean moment of new moon and also to the moon's and sun's anomaly at that moment and add to, or subtract from, the mean moment of full moon the sum of the sun's and moon's equations. (See examples worked out in sections 93 and 94.)

83. We may preface our observations on eclipses by the following passages from a well-known French work, first published in the 18th century, and still regarded as a standard authority on chronology, "*L'Art de vérifier les Dates* ;—

"The magnitude of an eclipse is indicated in digits. A digit is the twelfth part of the diameter of a heavenly body : accordingly, an eclipse of four digits is one where the third part of the diameter of a heavenly body is in shadow ; if one half of the diameter is in shadow, the eclipse is said to be of six digits ; and if the whole of the diameter is in shadow, the eclipse is said to be of twelve digits. Further, in a total eclipse, if the part which is least in shadow is removed from the edge of the shadow by as much as two digits, these two digits are added to the twelve, and the eclipse is said to be one of fourteen digits.....

84. "The duration of an eclipse of the moon is proportional to its magnitude ; but it does not depend on this factor alone. We may say, in general, that a total eclipse of the moon will last at least $3\frac{1}{2}$ hours, and at most 4 hours and a few minutes. A partial eclipse above 6 digits may last as much as $3\frac{1}{4}$ hours or as little as $2\frac{1}{2}$ hours ; it seldom goes beyond those limits. An eclipse of between three and six digits lasts between two and three hours. The duration corresponding to 2 digits is $1\frac{1}{2}$ hours ; to 1 digit, 1 hour ; to half a digit, $\frac{3}{4}$ of an hour. The duration of total obscurity in a total eclipse is from $1\frac{1}{2}$ to 2 hours.....

85. "The Moon has no light of her own, but reflects that received by her from the Sun. Consequently, when in an eclipse the Earth passes between the Moon and the Sun, and cuts off the rays of the Sun from the Moon, the latter can shed no more light on Paris than on Pekin or on Constantinople. An eclipse of the Moon, therefore, commences at all points of the Earth at the same instant and lasts everywhere for the same length of time. All that we need see is whether the time of a lunar eclipse falls between local sunset and sunrise, as otherwise the eclipse will not be visible.

86. "On the other hand, the Sun is a self-luminous body : the Moon is very much smaller than the Earth : she is, in fact, a mere point in comparison with the Sun. From these well-known facts it follows that in a solar eclipse, the Moon passing between the Earth

and the Sun, cannot cut off the rays of the Sun from all parts of the Earth, at the same instant. She casts her shadow in succession on different parts of the Earth, and even the successive passage of the Moon's shadow covers during a single eclipse only a small total extent of the Earth's surface. Thus, journeying from West to East, a solar eclipse may first strike Spain, then France, then Germany, and then in succession the eastern countries as far as the farthest East of Asia, but the whole time Africa may remain untouched by the Moon's shadow".

87. The extent of the earth's surface, affected by a solar eclipse, is therefore a matter of calculation: and an exact calculation is by no means easy to introduce into a popular work of this kind.

The book entitled *L'Art de vérifier les Dates* gives (1) *all* lunar eclipses and (2) *all* solar eclipses visible anywhere in the civilized world known to history, marking, by a series of ingenious conventions, the path of each solar eclipse, the regions where it is visible and the latitudes where it is central (*a*) under the fifth meridian, *i.e.*, the meridian of Paris, (*b*) under the meridian where it is noon at the moment of true conjunction, and (*c*) under the 155th meridian. Other useful details, given under each eclipse, in the same valuable work, need not be reproduced here, as nothing short of a translation of the whole Chapter on Eclipses would give the reader an adequate idea of its contents.

88. We have given in Tables X and XII *all* lunar eclipses, and it is easy for the reader to calculate the ending moment of the full moon tithi, which will enable him to know whether the eclipse could have been seen in India at the place under consideration. We have given *all* solar eclipses, as given in the French work, from A.D. 1 to A.D. 300, and after the latter date we have, as a rule, not mentioned eclipses which, according to the same authority, could not have been visible in India. From A.D. 1900 to A.D. 2000 all solar eclipses are marked.

89. The points where the moon's orbit crosses the ecliptic are called the *nodes* and in order that an eclipse may occur, the opposition at the time of a lunar eclipse, or the conjunction at the time of a solar eclipse, must happen at or near a node. The sun's distance from either node is therefore an important factor in determining whether an eclipse is or is not possible at a particular New or Full Moon. Eclipse-Table X-A (pp. 130, 131) for Centuries and Odd Years will enable the reader to calculate the Sun's distance from either node at any moment from B.C. 1 to A.D. 2000, and by applying the following canons (adapted from Professor Jacobi's article in Vol. 1 of *Epigraphia Indica*) he may determine whether a solar or a lunar eclipse is certain, doubtful, or impossible at a particular New or Full Moon respectively.

Solar and Lunar Eclipses as determined by Sun's distance from node at New and Full Moon.

IF SUN'S DISTANCE FROM NODE AT NEW MOON IS

Between 0 and 15.598 days, or between 157.714 and 173.312 days,

Between 15.771 and 18.198 days or between 157.541 and 155.114 days,

Between 18.371 and 154.939 days,

A SOLAR ECLIPSE IS	}	Certain.
		Doubtful.
		Impossible.

IF SUN'S DISTANCE FROM NODE AT FULL MOON IS

Between 0 and 10·052 days, or between 163·260 and 173·312 days,

Between 10·225 and 13·345 days, or between 163·087 and 159·967 days,

Between 13·518 and 159·794 days,

A LUNAR ECLIPSE IS	Certain.
	Doubtful.
	Impossible.

90. We shall now apply the canons to some actual cases, and see how far they will be of use to us in practice.

Opening the first page of Table X, we see a succession of solar eclipses at the Jyeshtha new moon in the years A.D. 12, A.D. 13, and A.D. 14, and we see a similar succession of lunar eclipses in the same lunar month in the years A.D. 20, A.D. 21, and A.D. 22. We also see that in Lunar Jyeshtha, A.D. 12, as well as in Lunar Jyeshtha A.D. 22, there was a lunar as well as a solar eclipse. We shall see if our canons will help us in verifying these eclipses. The reader should note how an eclipse may be located with the help of the secular distance of the sun from the node (*i.e.*, Distance from node for Centuries and Odd Years) as given in Table X-A and the head line entries of Table X.

	(1)	(2)	(3)	(4)	(5)	(6)
☉'s Distance from Node Table X-A	A.D. 12	A.D. 13	A.D. 14	A.D. 20	A.D. 21	A.D. 22
	days	days	days	days	days	days.
For century 1 B.C. ...	62·91	62·91	62·91	62·91	62·91	62·91
For odd year ...	50·30	68·93	87·56	26·06	44·69	63·33
Up to first New Moon in Solar Year ...	26·95	16·06	5·17	28·41	17·52	6·62
Up to Jyeshtha New Moon	29·53	29·53	29·53	29·53	29·53	29·53
Up to Jyeshtha Full Moon ...	...	...	...	14·76	14·76	...
	169·69	177·43	185·17	161·67	169·41	162·39
Deduct 173·31 days ...	(7)	* 173·31	* 173·31	...	...	(8)
		4·12	11·86			
Up to Jyeshtha Full Moon.	14·76	...	...	...	...	14·76
	184·45					177·15
Deduct ...	* 173·31	...	...	...	...	* 173·31
	11·14					3·84
	(1)					(6)

We can now classify these results.

SOLAR ECLIPSE: *Certain*, Results at foot of columns (2), (3), and also those in columns (1) and (6) marked (7) and (8) respectively.

LUNAR ECLIPSE: *Certain*, Results at foot of columns (5) and (6).
Doubtful, Results at foot of columns (1) and (4).

* The period of conjoint revolution of the sun's and moon's nodes is 346·6246 days and the half revolution is 173·3123167 days. This period should therefore be deducted whenever the sun's distance from a node exceeds 173·31 days.

91. We shall next see to what extent the canons will be of use to us in predicting eclipses. We may take as an example the solar year A.D. 1910. *

We first of all find out the distance of the sun from the node at the first new moon in the solar year.

☉'s distance from node for century beginning A.D. 1900	...	...	120·62
" " " for odd year 10	...	..	13·03
" " " at first new moon in solar year A.D. 1910	...		25·91
			<hr/> 159·56

92. As regards solar eclipses, we have to see whether 159·56 by itself, or the same increased by 29·53, or any multiple of 29·53 entered in the head lines of Table X, will bring us within the limits of *certain* or even *doubtful* solar eclipses.

We see at once that the figure 159·56 is itself within the limits of a *certain* solar eclipse. The date is the first new moon in the solar year, *i.e.*, 9th May, 1910. This eclipse was invisible in India.

The addition to 159·56 of 29·53 gives us 189·09, which by deduction of 173·31 is equivalent to 15·78, which is beyond the limits of certainty. There was in fact no solar eclipse on the corresponding date, Jyeshtha new moon, 7th June, 1910.

The addition to 159·56 of 177·18 (Kārttika new moon) will give us 336·74, which by deduction of 173·31 leaves 163·43, which is within the limits of certainty. In fact, there was a solar eclipse (invisible in India) on *Kārttika* New Moon, *i.e.* (according to Table X or XII) 2nd November, 1910.

The addition of no other multiple of 29·53 to 159·56 will give us a figure within "certain" or even "doubtful" limits for solar eclipses.

93. As regards lunar eclipses, our starting figure 159·56 should be increased by the day equivalent of the full moon tithi, 14·76 days.

$$159·56 + 14·76 = 174·32 \text{ days.}$$

Deduct 173·31

1·01 days.

We see that in the first lunar month of the solar year A.D. 1910 there must be a lunar eclipse.

The actual ending moment of the full moon tithi works out as follows :—

	Days.	Anomaly of first new moon.
First new moon in solar year	25·9134	0·535
	14·7653	14·765
☉'s Equation for 40·67 +·1140	40·6787	15·300
☾'s Equation for 15·414 +·1650		+·114 (☉'s Eqn.)
	+·2790	15·414
Commencement of Solar Year, Ap.	13·2080	
	54·1657	
Add total correction for latitude 13° N. on 40th day of Solar Year (Table XIII)	·0286	
	54·1943	

* This portion of the text was written before the eclipse in question happened. The force of the illustration is of course not lessened by its referring to an event now past and it has therefore been retained.

It thus appears that the centre of the eclipse occurred at Madras at $\cdot 1943$ of a day, *i.e.*, at 11 ghaṭikas 39 palas after sunrise. It is evident that a lunar eclipse at such an hour would be invisible in India.

94. The \odot 's distance from node at the first full moon of the solar year A.D. 1910 being 1.01, it is evident that an addition of 177.18 days, which will take us to the Kārttika Full Moon, will give us 178.19, which by deduction of 173.31 gives us 4.88 days, which is within the limits of a "certain" lunar eclipse. Let us calculate the actual ending moment of this Full Moon tithi.

	Days of Solar year.	\odot 's Anomaly. Days.
First Full Moon in Solar Year A.D. 1910 (sec. 93) ...	40.6787	15.300
Add for Kārttika Full Moon ...	177.1835	11.856
	<hr/>	<hr/>
	217.8622	27.156
\odot 's Equation for 217.86 days = — $\cdot 1263$		— $\cdot 1263$ (\odot 's Eqn.)
\odot 's Equation for 27.029 days = + $\cdot 0453$	— $\cdot 0810$	<hr/>
	<hr/>	27.0297
	— $\cdot 0810$	
	217.7812	
Commencement of Solar Year 1910, Ap. 13	$\cdot 2080$	
	<hr/>	
	217.9892	
Total correction (by Table XIII) for 217th day, + $\cdot 0111$	<hr/>	
	218.0003	

\therefore the centre of the eclipse at Madras was on the 218th day, reckoned from April 13, *i.e.*, (by Table VIII) 17th November, 1910, at $\cdot 0003$ of the day, *i.e.*, 1 pala or half a minute after sunrise on 17th November, 1910.

This very nearly agrees with the prediction in the Nautical Almanac reduced to the longitude of Madras. The eclipse was visible at Madras.

No other multiple of 29.53, added to 1.01, will give us a lunar eclipse in the Solar Year A.D. 1910 within the limits of certainty.

95. A third use of the canons is to enable us to detect omissions from or incorrect entries in lists of eclipses.

The book entitled *L'Art de vérifier les Dates* states that there was no eclipse in the year A.D. 555.

But seeing that the \odot 's distance * from node at the first new moon in the solar year A.D. 554—55 was 163.66 days, and that the year was one with an *adhika* month, it is plain from the head-lines of Table X that the addition to 163.66 of 354.37 gives us 518.03 days, which, deducting 346.62 leaves 171.41 days, which indicates that *certainly* there was a solar eclipse at the corresponding New Moon, *i.e.*, on Chaitra New-

*23.76
139.68
0.22

163.66

Moon day, 8th March A.D. 555. As a matter of fact, it appears from OPPOLZER'S *Canon der Finsternisse*, that there was a solar eclipse on 8th March, A.D. 555.

96. Let us next take a case in which the canons will show us that the *Art de vérifier* is right and other lists wrong. The French book mentions a Lunar Eclipse (penumbral) on 6th May A.D. 692, while other lists do not mention it.

$$\begin{array}{r}
 *154.79 \\
 154.53 \\
 \hline
 3.24 \\
 312.56 \\
 29.53 \\
 \hline
 11.76 \\
 356.85 \\
 \hline
 -346.62 \\
 \hline
 10.23
 \end{array}$$

We find that the \odot 's distance* from node at the full moon following Jyeshtha New Moon (21 Ap. A.D. 692) was, as shown in the margin, 10.23 days, which makes it almost certain that there was then a Lunar Eclipse. The French chronological work is, therefore, right.

CHAPTER XIII.

JOVIAN CYCLES, YEARS, AND MONTHS.

[Note.—For the calculation of the mean period of a Jovian year, see sec. 230 *infra*.]

97. A Jupiter's cycle of 60 Jovian years is often met with in Indian chronology as a mode of reckoning time. Each of the years in the cycle receives a name corresponding to the name of one of the years in Table I, but while the so-called Jupiter's cycle in Table I, as used to this day in Southern India, is merely a cycle of 60 Indian solar years, the Jupiter's cycle, properly so called, which has been in use in Northern India and which is given in Table XIV, is a cycle of real Jovian years, calculated by means of the multiplication tables in Table V and the following table for centuries.

Kaliyuga.	Christian Era.	Jupiter's Samvat (with bija).	Kaliyuga.	A.D.	Jupiter's Samvat (with bija).
3001	B.C. 101	36.1117	4101	1000	8.9817
3101	B.C. 1	17.2817	4201	1100	50.1517
3201	A.D. 100	58.4517	4301	1200	31.3217
3301	200	39.6217	4401	1300	12.4917
3401	300	20.7917	4501	1400	53.6617
3501	400	1.9617	4601	1500	34.8317
3601	500	43.1317	4701	1600	15.9917
3701	600	24.3017	4801	1700	57.1717
3801	700	5.4717	4901	1800	38.3417
3901	800	46.6417	5001	1900	19.5117
4001	900	27.8117	5101	2000	0.6817

98. We shall take an example of a Jupiter's Samvat and show how it is calculated. The Date of a Sanskrit Manuscript is given by its author as "Saka 1396, (Vikrama) Samvat 1531, year *Subhakrit*, Kārttika Sudi 9, after Dakshinayana on Wednesday, *Dhanishtha* Nakshatra, *Vridhhi* yoga, *Kaulava* karana, the moon in *Kumbha*" (*Indian Antiquary*, XIX, p. 27). For the Nakshatra, Yoga, Karana and Zodiacal Sign in this case, see sec. 266, *infra*.

We first calculate the tithi in the usual way:—

By Table X the Kārttika New Moon of Vikrama 1531 (A.D. 1474), was
(2) Monday, October 10.85

$$\begin{array}{r}
 \zeta \text{'s Equation} + .20 \\
 \odot \text{'s Equation} - .15 \\
 \hline
 + .05
 \end{array}$$

$$\begin{array}{r}
 \text{Add for 9 tithis} \quad 8.86 \\
 \text{Equation} \quad + .05 \\
 \hline
 (4) \text{ Wednesday, Oct.} \quad 19.76
 \end{array}$$

$$\begin{array}{r}
 \odot \text{'s Anomaly.} \quad 20.27 \\
 177.18 \\
 8.86 \\
 \hline
 206.31 \\
 \zeta \text{'s Anomaly.} \quad 4.559 \\
 11.856 \\
 8.86 \\
 \hline
 25.275 \\
 \odot \text{'s Eqn.} - .15 \\
 \hline
 25.12
 \end{array}$$

We have now to find the equivalent in Jupiter's cycle of the 206·31 days of the solar year A.D. 1474.

Equivalent of A.D. 1400 (by above table)	53·6617
„ „ 74 years (Table V) Jupiter's Samvat	14·8658
„ „ 200 days (do.)	·5540
„ „ 6 days (do.)	·0166
	<hr/>
	69·0981
Deduct completed cycle	60
	<hr/>
	9·0981

That is, No. 9 of Jupiter's cycle (according to Table XIV) *i.e.*, *Subhakrit* had expired on the day in question of the solar year.

99. The year of Jupiter's cycle, ordinarily quoted in N. India, is that which was completed at the *beginning* of the solar year, and in this case inasmuch as only ·098 of the Jovian year, *i.e.*, only 36 days, had elapsed since the beginning of *Subhakrit* up to the 206th day of the solar year, the previous Jovian year, *Plava*, must have been current at the beginning of the solar year A.D. 1474. When the Jovian year quoted is only that which had been completed at the beginning of the solar year, all we have to do is to calculate the Jovian year for the *integral* solar year we are dealing with or, which is much simpler, read off the corresponding year of Jupiter's cycle from Table XIV.

100. Altogether, we see there are three meanings which might be attached to the citation of a year of Jupiter's cycle:—

- (1) A year of the southern cycle (Table I), which is merely a solar year with a Jovian *name*.
- (2) A year of the northern cycle (Table XIV), which is the Jovian year actually completed at the *beginning* of a solar year.
- (3) A year of the northern cycle (Table XIV), being the Jovian year actually completed at the actual *moment* we are dealing with.

The context alone must enable us to conjecture which of these meanings is to be attached to a citation of a Jovian year.

101. Also, where the second of the three modes of citation is followed, it is evident that if any other Jovian year has had its beginning *as well as its end* in the course of a solar year, that Jovian year will be *kshaya* or suppressed.

Hence it is that certain Jovian years are actually suppressed in the northern system of reckoning. The suppressed years are shown by blanks (.....) in Table XIV.

For instance, the Jovian equivalent of A.D. 1514 (solar year) is

34·8317
+ 14·1638
<hr/>
48·9955

And the Jovian equivalent the next year, of A.D. 1515* (solar year) is $34.8317 + 15.1755 = 50.0072$. That is, the 48th Jovian year, **Vriṣha** was current † at the beginning of Solar Year A.D. 1514* and the 50th Jovian year (**Subhanu**), was current † at the beginning of Solar Year A.D. 1515*. Therefore the 49th Jovian year **Chitrabhanu** which was not used in this particular cycle of 60 years, was *kshaya* or suppressed. Of course there would be no suppression of a Jovian year if the third mode of citation was always used : but it is evident that the third mode, which requires an exact knowledge of the actual beginning and end of a Jovian year and which might be used by an author, would not be in *popular* use.

102. Fourth Mode of Citation (4). There is a fourth mode of citation of Jovian years which we often find in Malayalam inscriptions, and that is to cite, instead of one year out of every sixty, one year out of every twelve. In twelve Jovian years the planet Jupiter passes through the twelve signs of the zodiac and each sign corresponds to one of the twelve years of Jupiter's revolution. In the above case Jupiter having completed 9 Jovian years ‡ would be described as being in the 10th sign of the zodiac, i.e., *Makara* (Eye-table.)

103. Fifth Mode of Citation (5). In this the 12 Jovian years receive the names of the 12 lunar months, *Kārttika* being the first and *Asvina* the 12th. The Jovian years § (properly, months) are distinguished from lunar months by the prefix *Mahā*. Thus, Mahā-Kārttika, Mahā-Mārgaśīra, etc. In the example in sec. 98, Jupiter was in Mahā-Srāvana.

104. Sixth Mode of Citation (6). This is the heliacal rising system, in which the Jovian cycle begins with the heliacal rising of Jupiter, i.e., his re-appearance after a conjunction with the sun. The system is exhaustively dealt with by Mr. Dikshit in his introduction to Vol. III of Dr. Fleet's *Corpus Inscriptionum Indicarum*, and all the citations of this kind, hitherto found in inscriptions, are there collected.

105. Readers in Southern India will be mainly interested in the 1st and 4th modes of citation, of which the latter is otherwise called the "mean-sign system" § and which is met with in Travancore inscriptions, e.g., those discussed by Dr. Schram in *Indian Antiquary* Vol. XXV (1896), pp. 9—11 ; and by Professor Kielhorn at pp. 53, 174. *Ibid.*

We shall cite an example : " Kollam 389, Jupiter in Kumbha, and the Sun 18 days old in Mīna, THURSDAY, Pushya Nakshatra, 10th Lunar day ".

Kollam 389 is equivalent, as we shall see in sec. 112 *infra* to A.D. $389 + 825 =$ A.D. 1214 (Indian Solar Year).

We might calculate the day of the solar year in one of two ways, either by taking the equivalent of the solar date from Table VIII or the Eye-table or by calculating the solar date of the tithi. The first is the simpler method and it gives us $335 + 18 = 353$ days.

* For convenience of reference, we use the expressions " Solar Year A.D. 1514 " to mean " the Indian Solar Year which began in A.D. 1514, i.e., Saka 1436=Vikrama 1571=Kaliyuga 4615, which began in March, A.D. 1514 ".

† The Jovian year *current* at a particular moment is, as the reader will have observed from the example already given, the Jovian year actually *completed* at that moment, omitting fractions. As no other Jovian year is ever referred to in the northern system, we need not be careful to distinguish between *expired* and *current* Jovian years, but may use the expressions as synonymous.

‡ "Jovian year" does not mean the period of revolution of Jupiter's orbit (which is a little less than 12 solar years) but one-twelfth of that period, which is roughly equivalent to a solar year.

§ In Part IV. of this book on Planetary Chronology, the reader will find a direct method of calculating either the mean or the actual sign or rasi occupied by Jupiter at any moment. (See Sec. 238).

The Jovian equivalent of 1214 A.D. is	$31.3217 + 14.1638 = 45.4855$	(Sec. 98.)
" " 350 days is (35 days \times 10) =	.9694	Table V.
" " 3 "	.0083	do.
	<hr/>	
	46.4632	

Dividing the total equivalent by 12, we have as remainder 10.4632, *i.e.*, Jupiter has left the 10th sign and is in the 11th, *i.e.*, Kumbha (4th mode of citation). Or, we can calculate Jupiter's mean sign for 353 days of A.D. 1214 direct from Table XVII (pp. 202, 203), thus : $220.10^\circ + 64.86^\circ + 29.33^\circ = 314.29^\circ$, *i.e.*, (by Eye-Table) Jupiter was in *Kumbha*.

106. The equivalent in the Northern Cycle of the 46th Jovian year is (by Table XIV) *Pramathin* (3rd mode of citation), while in the Southern Cycle (1st mode of citation) the Jovian name for the solar year A.D. 1214 is (by Table I) *Bhava*. The Jovian year (Northern System) *current* at the beginning of the solar year A.D. 1214 was No. 45 *Bahudhanya*, which would be cited in cases where the 2nd mode of citation was in use.

CHAPTER XIV.

THE VARTTAMANA, PURNIMANTA AND KARTTIKADI SYSTEMS OF CITATION.

107. The ordinary or normal mode of citing an Indian date is by means of *gata* or 'expired' years (already explained, sec. 5 *supra*), *amanta* months (or months beginning with the first tithi after new moon or *amāvāsyā*), and *Chaitrādi* years (or lunar years beginning with *Chaitra*). The lunar year can begin with Chaitra only when the solar year begins with Mesha Sankrānti. Therefore a reckoning by Chaitrādi lunar years is the same as reckoning by Meshādi Solar Years.

108. Exceptional modes of citation, used at certain epochs of history, or still used in certain parts of India, are :—

Varttamāna, or current years, opposed to *gata* (expired); *Pûrnimānta* months, beginning with the tithi after full moon; and *Kârttikādi* lunar years (or "southern" years) beginning with the lunar month *Kârttika*.

109. In the *Pûrnimānta* system, each month beginning with a full moon is named after the next *amānta* month, but takes in the dark fortnight preceding each new moon. It is to this system that we owe the name *paksha*, lit. a wing, the dark and bright fortnights being the wings on either side of a new moon.

110. In the *Kârttikādi* lunar year system, the year beginning with lunar *Kârttika* takes the number of the Meshādi solar year then running, and has in common with it the five months, Lunar *Kârttika* to Lunar *Phālguna*.

Canons.

- I. A *dark* fortnight in *n*th *Amānta* month is in (*n* + 1)th *Pûrnimānta* month.
- II. Any month or tithi in *N*th year, expired, is in (*N* + 1)th year *current*.
- III. Any of the months named in the margin in *N*th year *Chaitrādi*, expired, is ascribed to the
 - (a) (*N* - 1)th year *Kârttikādi*, expired, or to
 - (b) *N*th year, *Kârttikādi*, *current*.

Chaitra
Jyeshtha
Ashadha
Sravana
Bhadrapada
Asvina

N.B.—Conversely, any of the above months in *n*th year *Karttikadi*, expired, is ascribed to (*n* + 1)th year *Chaitradi*, expired.

For clearness' sake, we will present these three rules under three aspects, one of which, when we are in doubt, every problem before us must assume.

First Aspect.—If we have before us a dark fortnight or *bahula* tithi of the n th month in the N th year, known to be an expired year, but do not know whether the system is *amānta* or *pūrṇimānta*, we must search for the tithi both in the n th and the $(n-1)$ th month in our ordinary (*Amānta*) tables.

Second Aspect.—If we have before us a dark fortnight or *bahula* tithi of the n th month in the N th year, and do not know whether the month is *amānta* or *pūrṇimānta*, nor whether the year is expired or current, we must, in using our tables, look for the tithi—

- (1) in the n th month, N th year, expired ;
- (2) in the $(n-1)$ th month, N th year, expired ;
- (3) in the n th month, $(N-1)$ th year, expired ; and
- (4) in the $(n-1)$ th month, $(N-1)$ th year, expired.

Third Aspect.—If we have before us a dark fortnight or *bahula* tithi of the n th month (from Chaitra to Âśvina, inclusive) in the N th year and do not know whether the month is *amānta* or *pūrṇimānta*, nor whether the year is expired or current, *Chaitrâdi* or *Kârttikâdi*, we must, in using our tables, look for the tithi—

- (1) in the n th month, N th year, expired ;
- (2) in the $(n-1)$ th month, N th year, expired ;
- (3) in the n th month, $(N-1)$ th year, expired ;
- (4) in the $(n-1)$ th month, $(N-1)$ th year, expired ;
- (5) in the n th month $(N+1)$ th year, expired ; and
- (6) in the $(n-1)$ th month $(N+1)$ th year expired.

N.B.—For bright fortnight or *Sukla* dates in any month, no search need be made in any case in the $(n-1)$ th month ; and whether for bright or dark fortnight dates in the months of Karttika to Phalguna inclusive, no search need be made in any case in $(N+1)$ th year, *expired*.

Readers who prefer Professor Kielhorn's mode of stating the same rules will find it in *Ind. Antiq.*, Vol. XIX, p. 22 or at p. 406 of *Ep. Ind.*, Vol. I. Any rules must be somewhat perplexing at first sight and should be carefully reasoned out by those interested in such investigations.

111. The Lunar year beginning with lunar Chaitra of any solar year n is itself $(n+1)$. Thus, Chaitra 1265 may mean:—

- (a) Lunar Chaitra at the end of current solar 1264, *i.e.*, at the end of expired solar 1263.
- (b) Do. do. do. expired solar 1264 and before the beginning of solar 1265.
(expired)
- (c) Do. do. do. do. do. 1265 and do. 1266 do.

This ambiguity is independent of the difference between *Chaitrâdi* and *Kârttikâdi* systems, and is peculiar to the lunar month Chaitra.

CHAPTER XV.

THE ERAS NOW IN USE OR MET WITH IN INSCRIPTIONS.

112. In the following Summary of Indian Eras, adapted from Cunningham and other authorities, we give in each case the formula whereby a year of each era, "expired" or "current" as the case may be, may be obtained from the A.D. year, also noting where the era is or was in use, and whether it is *amânta* or *pûrnimânta*, *Chaitrâdi* or *Kârttikâdi* and so forth.

(1) *Kaliyuga* (expired year = 3102 *minus* B.C. year ; A.D. year + 3101). Used all over India as a solar (*Meshâdi*) and luni-solar (*Chaitrâdi*) year. The years in this era, with A.D., Śaka, and Vikrama equivalents, are regularly given in our Table X from B.C. 1 to A.D. 2000 ; and in Table XII from A.D. 1840 to A.D. 1920. For the years B.C. 3102 to B.C. 1, K.Y. 0 to K.Y. 3101, see Addendum, p. (114.)

(2) *Saptarshi* (current year = A.D. year + 76). Mostly *current* and mostly *pûrnimânta* and *Chaitrâdi*. At present in use in Kashmir and formerly in Multan and elsewhere. Quoted generally in cycles of 100 years. Thus A.D. 1910 = Saptarshi 1986, current, quoted only as "86 Saptarshi, current."

(3) *Vikrama Era* (expired year = A.D. year + 57). Extensively used at present in Guzerat and all over Northern India, except Bengal : *Kârttikâdi* and *Amânta* in Guzerat, hence called *Southern Vikrama* ; *Chaitrâdi* and *Pûrnimânta* in N. India, hence called *Northern Vikrama*. Other names, "Malava Era" ; and also simply "Samvat". The Vikrama years, expired, from B.C. 1 to A.D. 2000 are regularly shown in our Table X, and from A.D. 1840 to A.D. 1920 in our Table XII.

(4) *Saka Era* (expired year = A.D. year *minus* 78). Extensively used in India both in the past, and at present. *Meshâdi* (for solar year) and *Chaitrâdi* (for luni-solar year) : generally *amânta*, but *pûrnimânta* in Northern India. Śaka equivalents of Kaliyuga and Vikrama years, expired, from B.C. 1 to A.D. 2000, are regularly given in our Table X, and from A.D. 1840 to A.D. 1920 in our Table XII.

(5) *Kollam Era* (current year = A.D. year *minus* 825). Used in Malabar, Cochin, and Travancore since A.D. 825. Begins in N. Malabar with solar *Kanya* and in S. Malabar with *Chingam* (Simha) ; (For memory aids, see sec. **138** *infra*) ; always *solar* and *current*. For years from A.D. 1840 to A.D. 1920, Kollam equivalents are regularly given in our Table XII. For previous years, the following century equivalents will be of use :—

A.D. 900 = Kollam 75	A.D. 1500 = Kollam 675
1000 = " 175	1600 = " 775
1100 = " 274	1700 = " 875
1200 = " 375	1800 = " 975
1300 = " 475	1900 = " 1075
1400 = " 575	2000 = " 1175

(6) *Bengali San* (or *Sen*) (current year = A.D. year *minus* 593). *Meshâdi*, *current solar year*. Now in use in Bengal. For A.D. 1840 to A.D. 1920, B. San equivalents are regularly given in our Table XII. For previous years the following century equivalents will be of use :—

A.D. 600 = B.San 7	A.D. 1100 = B.San 507	A.D. 1600 = B.San 1007
" 700 = " 107	" 1200 = " 607	" 1700 = " 1107
" 800 = " 207	" 1300 = " 707	" 1800 = " 1207
" 900 = " 307	" 1400 = " 807	" 1900 = " 1307
" 1000 = " 407	" 1500 = " 907	" 2000 = " 1407

(7) *Chedi or Kalachuri Era* (current year = A.D. year minus 247), *current, Asvinâdi, pûrnamânta*.

A.D. 300 = Chedi 53 current.	A.D. 800 = Chedi 553 current.
" 400 = " 153 "	" 900 = " 653 "
" 500 = " 253 "	" 1000 = " 753 "
" 600 = " 353 "	" 1100 = " 853 "
" 700 = " 453 "	" 1200 = " 953 "

Not now in use, but was in use under the Kalachuri kings in Western and Central India.

(8) *Gupta* (current year = A.D. year minus 319).

A.D. 400 = Gupta 81 current.	A.D. 600 = Gupta 281 current.
" 500 = " 181 "	" 700 = " 381 "

Not now in use. Was in use in Central India and Nepal in the centuries above indicated as *current, Chaitrâdi, pûrnamânta*.

(9) *Valâbhi Era* (current year = A.D. year minus 318). *Current, Kârttikâdi, amânta, or pûrnamânta*.

A.D. 400 = Valâbhi 82 current.	A.D. 900 = Valâbhi 582 current.
" 500 = " 182 "	" 1000 = " 682 "
" 600 = " 282 "	" 1100 = " 782 "
" 700 = " 382 "	" 1200 = " 882 "
" 800 = " 482 "	" 1300 = " 982 "

Not now in use. Was in use in Kathiavâd and neighbourhood in centuries above indicated.

(10) *Vilâyati year* (current year = A.D. year minus 592). *Kanyâdi, solar, current*.

Now in use in Orissa. Months begin invariably *on* the day of Sankrânti instead of the next or the third day after [see Sec. 144 (1) *infra*].

This era bears to Bengali San pretty much the same relation that the Valâbhi bore to the Gupta era.

(11) *Amli year* (current year = A.D. year minus 592). *Luni-solar, current*. Lunar year changes on *Bhâdrapada sukla 12th*, i.e., some days before, or some days after, Kanyâ Sankrânti. Otherwise the same as Vilâyati. Current in Orissa. Probably bears the same relation to Vilâyati that the luni-solar year in the Telugu country bears to the solar year of the Tamil country (i.e., only New Year Day is different in each case).

(12) *Fasali year* (luni-solar) in Bengal, and N.W. India (current year = A.D. year minus 592); *pûrnamânta and lunar Asvinâdi* (i.e., it begins on pûrnamânta Âśvina, bahula pratipada); luni-solar year for Bengal, just as the Bengal San is the solar year for the same tract of country. Like all luni-solar years, the *Fasali* takes the number of the next Solar San. Thus, A.D. 1900 was, as we have seen, Bengal San 1307 current, but the luni-solar *Fasali* beginning on *Asvina krishna pratipada* of A.D. 1900 takes the number of the next Bengal San, i.e., 1308 current. Hence the formula for Bengal *Fasali* is "current A.D. year minus 592".

(13) *Dakhan Fasli* (current year = A.D. year *minus* 593) was up to A.D. 1556 (when its number was 963, *vide* Table XV, p. 195) a Hijra year, but from that year forward it has been kept as a solar year (identical in number with Bengal San), beginning, in parts of Bombay, when the Sun enters the Nakshatra *Mrigasîra*,* *i.e.* (now) about 7th or 8th June. The months, their periods of beginning, and number of days, are the same as in the Muhammadan calendar.

(14) The *Madras Fasli* year is an *agricultural, solar, tropical* year, beginning on 1 July and having no divisions of its own into months and days. Its formula is "current Fasli = A.D. year *minus* 590". The agricultural or revenue year from 1 July 1910 to 30 June 1911 might be expressed quite as well by the expression "Revenue Year 1910-11" as by the expression "Fasli 1320". The former expression would convey better sense to most people, and the expression "Fasli year", the use of which a blind tradition has consecrated in Madras, serves no other purpose than to confuse any one who is not a village karnam. It is a chronological anomaly and will no doubt gradually drop out of use.

(15) The Mahratta *Sûr-San*, *Shahûr-San* or *Arabi-San* (current year = A.D. year *minus* 599) was extensively used under the Mahratta supremacy, and is still occasionally met with. Begins, like the Dakhan Fasali, when the Sun enters the Nakshatra *Mrigashîra*.*

(16) *Harshakâla Era* (current year = A.D. year *minus* 606). Was current in Muttra (*Mathura*) in Kanauj, Nepal. Harsha 94 current = A.D. 700, and so on.

(17) *Nevar Era* (used in Nepal from A.D. 878 to }
A.D. 1768), *expired, Kârttikâdi, Amânta.* } Nevar 21, expired = A.D. 900.
Formula "Nevar expired = A.D. year *minus* 879". } Nevar 821, expired = A.D. 1700.

(18) *Chalukya Era* (expired year = A.D. year *minus* 1076). This was in use only from A.D. 1079 to A.D. 1162. It followed the Śaka months and pakshas. Chalukya 24 expired = A.D. 1100.

(19) *Lakshmana Sena Era* : (expired year = A.D. year *minus* 1108, according to present day almanacs). Now in use in Tirhut and Mithila, but along with the Śaka or Vikrama Era.

Dr. Kielhorn concludes that the formula for this era was (from A.D. 1194 to A.D. 1551). "Expired Lakshmana Sena year = A.D. year *minus* 1119". According to this formula A.D. 1200 would be equivalent to Lak. Sena 81 expired. The years of this era were *expired, Kârttikâdi, amânta*.

(20) *Mahratta Raja Saka Era* (current year = A.D. year *minus* 1673) was established on the accession of Śivâji: the number of the year used to change every *Jyeshtha sukla trayodasî*, which was the tithi or date of Śivâji's accession. Otherwise same as southern luni-solar amânta Śaka years.

(21) *Tarikh-i-Ilahi* (=mighty or divine era), dating from the accession of Akbar (14th February 1556), fell into disuse *temp.* Shah Jehan. Days and months were solar, without intercalations.

* By Eye-Table, the Sun enters Nakshatra *Mrigasîra* when his longitude is $53^{\circ} 20'$. The number of days corresponding to this (by Table XVII-A) = 56. When the solar year commences (as it did in A.D. 1911) on 13th April, the sun's entry into *Mrigasîra* Nakshatra would be on $56 + 13 = 69$ days from 1st April, *i.e.*, (Table VIII) on 8 June.

CHAPTER XVI.

NOTES ON TITHIS IN RELATION TO FESTIVALS.

113. Day on which a festival is celebrated.—As a *tithi* generally covers a portion of two days, it sometimes happens that though for civil purposes the tithi of a day is that which is current at sunrise, yet for religious purposes a tithi may have to be celebrated on the previous day when it begins. When a tithi is appointed for the celebration of a feast or fast, to be kept at forenoon, midday, late afternoon, midnight, etc., it is obvious that the feast or fast must be observed on the day when the tithi covers the prescribed part of the day. The day for such purposes is divided, first of all, into five portions *between sunrise and sunset*.

- (1) *Prâtahkâla*, or early forenoon, 6 ghaṭikas from sunrise.
- (2) *Samjava*, or forenoon, 6 to 12 ghaṭikas from sunrise.
- (3) *Madhyâhna*, or midday, 12 to 18 ghaṭikas from sunrise.
- (4) *Aparâhna*, or afternoon, 18 to 24 ghaṭikas from sunrise.
- (5) *Sâyâhna*, or late afternoon, 24 to 30 ghaṭikas from sunrise.

- (a) The 4 ghaṭikas before sunrise are called *arunodaya* or rise of dawn.
- (b) The 6 ghaṭikas after sunset are called *pradosha* or evening.
- (c) The 2 ghaṭikas in the middle of the night are called *nisitha*, midnight.
- (d) A tithi is *pûrvavidhâ* when it commences more than 4 ghaṭikas before sunset of one day and ends before sunset of the following day; a festival on such a tithi is celebrated on the first day of the tithi, not on the second.

N.B.—**Tithi dvayam**:—Two tithis meeting, *i.e.*, one commencing, and the other ending, between 18 and 24 ghaṭikas after Sunrise, when a similar meeting does not take place next day.

114. Festivals connected with Nakshatras as well as Tithis.—On the Nakshatra Śravishta (No. 23) in Lunar Śrâvana, the ceremony of Upakarma (Âvani Avittam) is celebrated. Our Table XI shows that this festival would ordinarily fall about full moon in Śrâvana. In the same manner, all festivals associated with particular *nakshatras* may be equally well connected with particular *tithis*. In Southern India, however, it is usual to connect *nakshatra* festivals with certain solar months in which they are celebrated; e.g., *Panguni Uttaram* (*i.e.*, *Uttara Phalgunî* Nakshatra in the Solar month called *Panguni*), *Chittirai Mûlam* (*i.e.*, *Mûla* Nakshatra in the Solar month called *Chittirai*); *Avani Avittam* (*vide supra*), etc. *Tithi* festivals are also often connected in Southern India with Solar Months; and if a festival falls, for instance, on *sukla* panchamî in a particular Solar Month, and there are two Śukla panchamîs in that month, the first is called *Sânya tithi* and the second only is celebrated.

115. Most Hindu festivals are associated in the first place with *tithis*, and the following notes for which we are chiefly indebted to Prof. Kielhorn's article in Vol. XXVI of the *Indian Antiquary*, pages 177--187, will be of interest to Hindu readers as well as to others. Prof. Kielhorn described the Hindu festivals in order of the lunar months: by way of variation, we will discuss them in the order of tithis. Our arrangement will enable the reader to locate at once an *ashtamî* or an *ekâdasî*, although the month is, as usual, suppressed in such citations.

PRATIPADA (TITHI I).

The **Chaitra** Sukla *pratipadâ*, i.e., that which precedes the Mesha Sankrânti, is the beginning of the Hindu Lunar year, New Year's Day (Lunar) being that on which the *pratipadâ* is current at sunrise. (When there is an *Adhika Chaitra*, that begins the year). The tithi is therefore called *Vatsarârambha* (commencement of the year). It is also *Navarâtrârambha*, there being another *Navarâtrârambha* on *Asvina sukla pratipadâ*.

Karttika Sukla 1 is *Balipratipadâ* or *Bali pûja* and it is *pûrvaviddha* as to time.

Bhadrapada bahula 1 is *Mahâlayârambha*.

Phalguna bahula 1 is *Vasantotsava*.

DVITIYA (TITHI II).

Ashada Sukla 2 is *Ratha-yâtra dvitîyâ* or *Râma-rathotsava*.

Karttika Sukla 2 is *Yama dvitîyâ* or *Bhrâtri-dvitîyâ* (because sisters make presents to brothers), and the time is afternoon.

The bahula dvitiya in **Ashada**, **Sravana**, **Bhadrapada** and **Asvina** is called *Asûnyasayana-vrata* and the fast is broken at moon-rise.

TRITIYA (TITHI III).

Chaitra Sukla 3 is *Gaurî-tritîyâ*; also *Matsa-jayantî*; (afternoon); also *Manvâdi* (forenoon).

Vaisakha Sukla 3 is *Kalpâdi* (forenoon); *Tretîyugâdi* (forenoon); *Akshaya-tritîyâ* (especial, when combined with Wednesday and Nak. Rohinî; time, forenoon); also *Parasurâma jayantî*.

Jyeshtha Sukla 3 is *Rambhâ-tritîyâ*, when Bhavâni is worshipped at *purvaviddha*.

Sravana Sukla 3 is *Madhu-sravâ* in Guzerat.

Sravana bahula 3 is *Kajjalî-tritîyâ*.

Bhadrapada Sukla 3 is *Varâha-jayantî* (afternoon); *Haritilikâ*, when Parvati is worshipped; *Manvâdi* (forenoon). The tithi is by some called *Sivâ*.

Phalguna bahula 3 is *Kalpâdi* (afternoon).

CHATURTHI (TITHI IV).

The Sukla Chaturthî in **every month** is called *Ganesa Chaturthî* or *Vinâyaka Chaturthî*, the chief being *Mâgha Chaturthî* (*Ganesa jayantî*). It is celebrated at midday. *Tila Chaturthî* is another name for **Magha** Sukla *chaturthî*. It is performed in the evening. *Kunda Chaturthî* is another name for the same festival.

Bhadrapada Sukla Chaturthî is special when it falls on Sunday or Tuesday.

Similarly, the bahula Chaturthî in **every month** is *Sankashtachaturthî* and is a fast day for people in difficulties: the fast is broken at moonrise which is the time. This Chaturthî is called *Angâraka Chaturthî* if it falls on Tuesday, and continues till moonrise.

Sravana bahula Chaturthî is called, par excellence, **Bahula Chaturthî** and cows are then worshipped.

PANCHAMI (TITHI V).

Chaitra Sukla 5 is *Sri Panchamî* according to some: it is also *Kalpâdi* (forenoon).

Sravana Sukla 5 is *Nâga Panchamî* and snakes are then worshipped. If tithi begins within 6 ghaṭikas after Sunrise of one day and ends within 6 ghaṭikas after Sunrise on the next day, the tithi is celebrated on the former day and that is *Nâga Panchamî*.

Bhadrapada Sukla 5 is *Rishi Panchamî* (midday).

Asvina Sukla 5 is *Lalitâ Panchamî* or *Upânga-lalitâ-vrata*, when Durgâ is worshipped in the afternoon.

Margasira Sukla 5 is *Nâgapûja* or *Nâgapanchamî*.

Magha Śukla 5 is *Vasanta panchamī*, when Rati and Kāma are worshipped in forenoon. *Srīpanchamī* is another name.

Phalguna bahula 5 is *Ranga panchamī*, when colours are thrown about.

SHASHTHI (TITHI VI).

Sravana Śukla 6 is *Kalki-Jayantī* (sunset), the last avatāra of Vishnu.

Sravana bahula 6 is *Hala-Shashthī*.

Bhadrapada Śukla 6 is *Sūrya-Shashthī* or *Skanda-Shashthī*.

Bhadrapada bahula 6 is Chandra *Shashthī*. It is called *KAPILA-SHASHTHI* when it combines on **Tuesday** with Nak. Rohinī and Yoga Vyatīpāta and the Sun is in Hasta. (See Sec. 54).

Karttika Śukla 6 is special for feeding of Brahmans when it falls on Tuesday.

Margasira Śukla 6 is *Skanda-Shashthī* or *Mahā-Shashthī*; *Champā-Shashthī*, when Siva is worshipped as Khandoba. This tithi is special when it falls on Sunday or Tuesday and combines with Nakshatra Satabhishaj and Yoga Vaidhriti, or either of the two.

[N.B.—Our Table XI shows that Nak. Satabhishaj (No. 24) may concur with the tithi in a year in which some month before Margasira is 'adhika'; but Yoga Vaidhriti (No. 27) can never concur with this tithi.]

SAPTAMI (TITHI VII).

A *Saptamī* on Tuesday, combined with Nak. Revati (that is, by Tab. XI, **bahula 7** in Āshādha or **Sukla 7** in Pausha or Māgha) is very auspicious. A *Sukla saptami*, falling on Sunday, is called *VIJAYA*, and is special for donations. A *Sukla saptami*, joined with the 1st quarter of Nak. Hasta, is called *BHADRA*. A *Sukla saptami*, coinciding with a Sankrānti is called *MAHAJAYA*, which, for making donations, is superior even to an eclipse.

Vaisakha Śukla 7 is *Gangā-Saptamī* or *Gangotpatti* (birth of Gangā—midday).

Sravana bahula 7 is *Sītalā-Saptamī* or *Sitalī-Vrata*, time *purvaviddha*.

Bhadrapada Sukla 7 is called by some *Aparājita*.

Āsvina Śukla 7 : about this tithi *Sarasvatī* is worshipped under Nakshatra Mūla.

Karttika Sukla 7 is *Kalpādi* (forenoon).

Margasira Śukla 7 is *Sūryavrata*.

Magha Śukla 7 is *Ratha-Saptamī* or *Mahā-Saptamī* (time, *arunodhaya*); *Manvādi* (forenoon).

ASHTAMI (TITHI VIII).

An *Ashtamī*, falling on Wednesday, is special and receives the name of *Budhish-tamī*. The *Sukla-Ashtamī* in **every month** is sacred to Durgā or Annapuranī; while the *Bahula-Ashtamī* in **every month**, called *Kālāshtamī*, celebrated at *purvaviddha*, is sacred to Krishna.

Chaitra Śukla 8 is *Bhavāni-utpatti*: when joined with Wednesday and Nak. Punarvasu, bathing on this tithi is special.

Sravana bahula 8: *Janmāshtamī*, *Krishnāshtamī* or *KRISHNA JAYANTI* (midnight); special when combined with Nak. Rohinī; less so, when joined only to *Monday* or *Wednesday*; *Manvādi* (afternoon).

Bhadrapada Sukla 8: *Jyeshthā-Gaurī-pūjana-vrata*, when moon is in Nak. *Jyeshthā*.

Bhadrapada bahula 8 : *Mahalakshmî vrata* (purvaviddhâ); *Ashtaka-srâddha*.

Asvina Sukla 8 is *Mahâshtamî* and is special, when joined to Tuesday.

Karttika Sukla 8 is *Gopâshtamî*, when cows are worshipped.

Do. bahula 8 is *Krishnâshtamî*, *Kâla-Bhairavâshtamî*, or *Kâla-Bhairava-jayantî*.

Margasira bahula 8 is *Ashtaka-srâddhâ* in the afternoon. The same is the case with bahula 8 in **Pausha**, **Magha** and **Phalguna**.

Pausha Sukla 8 is special when joined to Wednesday and Nak. Bharani (Rohini or Ardhra, according to some).

Magha Sukla 8 is *Bhîshmâshtamî* and is celebrated at midday.

Magha bahula 8 is Birth of *Ŝîtâ*.

NAVAMI (Tithi IX).

Chaitra Sukla 9 is *Râma-navamî* or *Râma-jayantî*, at midday.

Bhadrapada do. is *Aduhkha-navamî*.

Asvina do. is *Mahâ-navamî* or *Durgâ-navamî* : Manvâdi (forenoon).

Karttika do. is *Kretayugâdi* (forenoon).

Margasira do. is *Kalpâdi* (forenoon).

Magha bahula 9 is *Râmadâsa Navamî*.

DASAMI (Tithi X).

Jyeshtha Sukla 10 is *Dasa-harâ* (expiating ten sins) (see Sec. 54) or *Gangâvatâra*.

Ashada do. is *Manvâdi* (forenoon).

Asvina do. is *Vijayadasamî* or *DASARA* (afternoon ; special with Nak. Sravana); *Buddha-jayantî*.

EKADASI (Tithi XI).

Every *Ekâdasî* is sacred, like every *Amâvâsyâ*, and receives a special name. It is called **Vijaya** when joined with the Nak. *Punarvasu*. The following are the names of the 24 *Ekâdasîs* :—

Month Sukla.	Bahula.	Month Sukla.	Bahula.
Chaitra .— <i>Kâmadâ Ekâdasî</i> .	<i>Varâthinî ekâdasî</i> .	Bhadrapada .— <i>Vishnu parivartanotsava</i> or <i>Parivartinî Ekâdasî</i> .	<i>Indirâ Ekâdasî</i> .
Vaisakha .— <i>Mohini do.</i>	<i>Aparâ do.</i>	(Vishnu turning on his side : called Vishnu srinkhala , when 11th and 12th tithis meet in Nakshatra	
Jyeshtha .— <i>Nirjalâ do.</i>	<i>Yoginî do.</i>	<i>Sravana</i> .	
Ashada .— <i>Vishnusayanotsava ; Sayani or Vishnu-sayani Ekâdasî (i.e., Vishnu going to sleep).</i>	<i>Kâmadâ or Kâmikâ Ekâdasî</i> .		
Sravana .— <i>Putradâ Ekâdasî</i> .	<i>Ajâ Ekâdasî</i> .		

<i>Month Sukla.</i>	<i>Bahula.</i>	<i>Month Sukla.</i>	<i>Bahula.</i>
Asvina. — <i>Pâsânkusâ Ekâdasî.</i>	<i>Ramâ Ekâdasî.</i>	Pausha. — <i>Putradâ Ekâdasî</i> or <i>MUKKOTTI</i> or <i>VAIKUNTHA</i> <i>EKADASI</i> <i>Manvâdi</i> (forenoon).	<i>Shattilâ Ekâdasî.</i>
Karttika. — <i>Prabodhini Ekâdasî</i> (Waking of Vishnu), <i>Bhishmapanchaka vrata</i> commences.	<i>Utpatti Ekâdasî.</i>	Magha. — <i>Jayâ Ekâdasî.</i>	<i>Vijayâ Ekâdasî.</i>
Margasira. — <i>Mokshadâ Ekâdasî.</i>	<i>Saphalâ Ekâdasî.</i>	Phalguna. — <i>Amalakî Ekâdasî.</i>	<i>Pâpamochinî Ekâdasî.</i>

DVADASI (Tithi XII).

The *Dvadasi* is called *Mahâ-dvâdasî* in the following circumstances :—

11th Tithi current at sunrise on two successive days : the next Dyâdasî is called **Unmilani**.

12th Do. do. do. do. : the Dvâdasî is called **Vanjuli**.

12th Tithi, to be followed by a full moon or a new moon tithi, current at two sunrises — **Pakshavardhini**.

12th Tithi, joined with Nakshatra *Pushya*, is **Jaya** [*i.e.*, by Tab. XI, Bahula 12 in Bhâd ; or Sukla 12 in Phâlg. or Chait.]

Do. do. do. do. do. *Sravana* is **Vijaya** [*i.e.*, by Tab. XI, Sukla 12 in Bhâd., Asv. ; Bahula 12 in Phâlg.]

Do. do. do. do. do. *Punarvasu* is **Jayanti** [*i.e.*, by Tab. XI, Sukla 12 in Phâlg. ; Bahula 12 in Śrâvana].

Do. do. do. do. do. *Rohinî* is **Papanasini** [*i.e.*, by Tab. XI, Sukla 12 in Pausha, Mâgha ; Bahula 12 in Âshâdha].

Vaisakha Sukla 12, joined with Nak. *Hasta*, and Jupiter and Mars in *Simha*, Sun in *Mesha*, is **VYATIPATA**

Ashada Sukla 12 is the commencement of *Châturmâsya vrata*.

Sravana do. is *Vishnôh-pavitrâ-ropanam*.

Bhadrapada do. is *Vâmana jayantî* (midday) ; called **Sravana Dvadasi**, when joined with Nak. *Sravana*, and specially, when further joined with *Wednesday*.

Asvina bahula 12 is *Govatsa Dvâdasî* (evening).

Karttika Śukla 12 : (1) end of *Châturmâsya vrata*, which began on same tithi in Âshâdha.

(2) *Prabodhotsava* or *Utthâna dvâdasî* (preparation for waking Vishnu).

(3) *Tulasi vivâha* (marriage of Vishnu with the Tulasi plant).

(4) *Manvâdi* (forenoon).

Magha Śukla 12 : *Bhîshma dvâdasî*.

Do. bahula 12 : **Tila dvadasi** or **Vijaya**, when combined with Nak. *Sravana*.

[N.B.—This can only happen when a month previous to *Magha* is *Adhika*—See Table XI.]

TRAYODASI (Tithi XIII).

Chaitra Śukla 13 : *Madana trayodasî* or *Ananga Pûjâna vrata* (purvavidha); god of Love worshipped.

Bhadrapada bahula 13 : (1) *Kaliyugâdi* (afternoon).

(2) **Magha trayodasi**, when combined with Nak. *Magha*.

(3) *GAJACHAYA*, when joined to Nak. *Magha* and Sun in *Hasta*.

Asvina bahula 13 : *Dhana trayodasî*, when money lenders worship money.

Magha Śukla 13 : *Kalpâdi* (forenoon).

Phalguna bahula 13 : (1) **Varuni**, when joined with Nak. *Satabhishaj*.

(2) **Mahavaruni**, do. do. do. + *Saturday*.

(3) **MAHA-MAHA-VARUNI** when joined with Nak.

Satabhishaj + *Saturday* + *Yoga Subha*.

[N.B.—Combinations (1) to (3) can happen only when *Phalguni* or some previous month is *Adhika*—See Table XI.]

CHATURDASI (Tithi XIV).

Bahula Chaturdasî in **every month** is *Sivarâtri*.

Vaisakha Śukla 14 : *Narasimha jayantî* (sunset) : special when joined to Nak. **Svati** + *Saturday*.

Sravana Śukla 14 : *Varalakshmî vrata*.

Bhadrapada Śukla 14 : *Ananta chaturdasî*.

Asvina bahula 14 : *Naraka chaturdasî* (moonrise), fasting to avoid *naraka* or hell. *Dîpavali* (see *Asvina amâvâsyâ* below), may fall on this tithi if joined to Nak. *Svati*.

Karttika Śukla 14 : *Vaikunta chaturdasî* (midnight).

Margasira Śukla 14 : *Pâshâna chaturdasî*.

Magha bahula 14 : **MAHA SIVARATRI** (midnight, when Nak. *Sravana* is current).

Special, when, combined with *Sunday* or *Tuesday* and *Yoga Siva*.

[N.B.—*Yoga Siva* can combine with *Sivaratri* only when some month previous to *Magha* is *Adhika*—See Table XI.]

SUKLA PANCHADASI (Tithi XV) : Sukla 15 or Full Moon (Pûrñimâ).

A Sukla 15 or Pûrñimâ is called *Somavatî* when it falls on Monday and is special for donations.

It is called **Chudamani** when it is *further* joined with a lunar eclipse.

Most pûrñimâs receive special names, which are given below :—

Chaitra pûrñimâ : (1) *Manvâdi* (forenoon).

(2) *Hanumat-jayantî*.

(3) Special for bathing, when combined with Sunday, Thursday or Saturday.

Vaisakha pûrñimâ : *Kûrma jayantî* (late afternoon).

Jyeshtha pûrñimâ : (1) *Manvâdi* (forenoon).

(2) *Vata pûrñimâ* or *Vata Sâvitri* (purvaviddhâ).

(3) **Maha-jyaishthi**, when Moon and Jupiter are in Nak. *Jyeshthâ* and Sun in *Rohini*.

Ashada pûrñimâ : (1) *Manvâdi* (forenoon).

(2) *Sivasayanotsava*, or *Kokilâ-vrata* or *Vyâsapûjâ*.

Sravana pûrñimâ : (1) *Rig-yajuh-Srâvanî* (i.e., Srâvana for followers of Rig and Yajur Vedas).

(2) *Rakshabandhana* (tying a string round the arm) or *Raki-pûrñimâ* or *Nâralî pûrñimâ* (throwing cocoanuts into the sea).

(3) *Hayagrîva jayantî*.

Bhadrapada pûrñimâ : *Praushthapadi pûrñimâ* or *srâddha*.

Asvina pûrñimâ : (1) *Kojâgarî pûrñimâ* or *Kojâgara vrata* (midnight). Lakshmi and Indra worshipped ; games of chance.

(2) *Navânnâ pûrñimâ*, when new grain is cooked.

Karttika pûrñimâ : (1) *Manvâdi* (forenoon).

(2) *Châturmâsya vrata* ends.

(3) *Tripurî pûrñimâ* or *tripurotsava*.

(4) Special, when joined to Nak. **Krittika**.

(5) **Maha karttiki**, when joined to Nak. *Rohini*; or when Moon and Jupiter are both in Nak. *Krittika*.

(6) *Padmakayoga*, when Moon is in Nak. *Krittika* and Sun in Nak. *Visâkha*.

(7) **KRITTIKA** festival in Southern India.

Margasira pûrñimâ : (1) *Datta treya* or *Datta-jayantî* (evening).

(2) Special for donations of salt, when joined to Nak. **Mrigasira**.

- (3) **Ardra** festival in honour of Śiva at Chidambaram and elsewhere. Siva, in his incarnation of Nateśa, is said to have been born on Mârgaśīra Pûrṇimâ under the Nakshatra *Ardra*: the combination could take place only when some month previous to Mârgaśīra was *adhika*. (See Table XI).

Magha pûrṇimâ: **Maha-Maghi**, when Moon and Jupiter are both in Nak. **Magha**.

Phalguna pûrṇimâ: (1) *Manvâdi* (forenoon).

(2) *Holikâ* or *Hutâsani pûrṇimâ* (evening).

(3) *Kâman Pandigai* (destruction of Cupid by Śiva) in South India..

Bahula Panchadasi (Tithi XV): **AMAVASYA**—New Moon.

A Solar Eclipse on Sunday is **Chudamani**, and is special for donations.

Amâvâsyâ at the end of **Sravana** and beginning of **Bhadrapada**: *Pithori* or *Kusotpâtini*.

Do.	do.	Bhadrapada	do.	Asvina : <i>Sarvapitri</i> or MAHALAYA AMAVASYA : special when Sun and Moon are both in Nak. <i>Hasta</i> .
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Do.	do.	Asvina	do.	Karttika is DIPAVALI , with previous and following tithis: that on which Nak. is <i>Svâti</i> being the special day.
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Do.	do.	Pausha	do.	Magha (1) ARDHODAYA , when joined with <i>Sunday</i> in day time + Nak. <i>Sravana</i> + Yoga <i>Vyati-</i> <i>pâta</i> .
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[*N.B.*—This can only happen when some month previous to Magha is *Adikha*, See Sec. 54].

(2) **Mahodaya** when any one of these special features is wanting.

Do.	do.	Magha	do.	Phalguna : (1) <i>Dvâparayugâdi</i> (afternoon).
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(2) Special for *Srâddhas*, when joined with Nak. *Satabhishaj* or Nak. *Dhanishtha*.

Do.	do.	Phalguna	do.	Chaitra : <i>Manvâdi</i> (afternoon).
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CHAPTER XVII.

MODERN EQUATIONS FOR LUNAR INEQUALITIES.

116. In compliance with a desire expressed by many persons interested in the *Drig-ganita* system, it has been thought advisable to include in the present work three very simple tables (XVI-A, XVI-B and XVI-C) for correcting the ending moments of tithis worked out according to the *Sûrya-Siddhânta*, so as to bring them within 2 ghaṭikas of *Drig-ganita* or *Nautical Almanac* results, further approximation not being possible within the limits of a popular work. Seeing that *Siddhânta* and *Drig-ganita* panchāngams occasionally exhibit a divergence of 17 ghaṭikas (7 hours) in regard to tithis intermediate between new-moon and new-moon, the approximations now made possible will go a great way towards leading to a better understanding between the followers of the two systems.

117. Modern Astronomers use five principal equations in order to determine the moon's actual, from her mean, elongation (or tithi). These are (1) the sun's equation of the centre, (2) the moon's equation of the centre, (3) the moon's evection, (4) the moon's variation, (5) the moon's annual equation. Of these (5) is already included in the sun's equation and both are given together in Tables IX-*c* and IX-*h*, (4) depends only on the tithi and is given in the last column of Table XVI-A, while (2) and (3) are given respectively in Tables XVI-B and XVI-C.

118. The example given below will show clearly how Table XVI is to be used, but it will be useful to bear in mind the following rules :—

Rule (1) Table IX gives *equated anomalies* (as explained in sec. 251) for *mean* tithis, *i.e.*, each anomaly given in Table IX-*a*, *b* and *g*, for the moon, contains the equation which has to be separated before applying the equation to the *mean* tithi, whereas the anomaly given in Tables XVI-B and XVI-C is a *mean* anomaly for the *actual* moment of the tithi. The principle of the method is to work until the equation obtained from the *equated* anomaly of Tables IX-*a*, *b* and *g*, is equal to the equation obtained from the *mean* anomaly in Tables XVI-B and XVI-C. Accordingly, Table XVI enables us to ascertain an ending moment not *per saltum*, but gradually and by successive approximations, using the equated anomalies of Tables IX *a*, *b* and *g*, as our base.

Rule (2). Tables XVI-B and XVI-C apply, as they stand, only to the first quarters (0 d. 0 gh. 0 p. to 6 d. 53 gh. 20 p.) of the anomalistic month, when the equations are **negative**. For the 2nd quarter (6 d. 53 gh. 20 p. to 13 d. 46 gh. 40 p.) the equation is **negative**, and the argument should be obtained by deducting the given anomaly *from* 13 days 46 ghat. 40 palas. For the third quarter (13 days 46 gh. 40 p. to 20 d. 40 gh. 0 p.) the equation is **positive** and the argument should be obtained by deducting 13 d. 46 ghat. 40 palas *from* the given anomaly. For the fourth quarter (20 d. 40 gh. 0 p. to 27 d. 33 gh. 17 p.) the equation is **positive** and the argument is obtained by deducting the given anomaly *from* 27 days 33 ghat. 17 palas.

Rule (3). On account of differences between Indian and European astronomical constants, 45 palas have to be added to the moon's mean elongation or tithi and 14 ghaṭikas to the moon's mean anomaly. These corrections are applicable from the year A.D. 1800 to the year A.D. 2000.

Example.

119. To find the ending moment of *bahula Shashthi* (21st tithi), **Nija Sravana** A.D. 1909.

	d.	gh.	pal.	☉'s Anomaly. d. gh. pal.	☾'s Anomaly. d. gh. pal.
According to the Ephemeris for A.D. 1909 (Table XII),					
Mean new-moon of Nija Śrâvana was on Aug. ...	16	20	46	125 23 49	10 18 19
Add equivalent of 21 tithis (<i>bahula shashthi</i>) ...	20	40	17	20 40 17	20 40 17
Add (for diff. between Ind. and Eur. constants)...			+ 45		+ 14

	37	1	48	146 4 6	31 12 36
☉'s Eqn. for 146 d. 4 gh. (Table IX- <i>h</i>)—9gh. 40p.				Ded. 1 an. month.	27 33 17
☾'s Variation for Shashthi (Table XVI-A)—1gh. 43p.					3 39 19
					— 11 23
					3 27 56

☾'s Anom. for 3 days 27gh. 56p. by Table IX- <i>g</i> is —16gh. 40p. (B)					— 16 40
				(C)	3 11 16

The argument for Table XVI-B is the given moon's anomaly (C):— 3 11 16

Do. Table XVI-C is 2 (☾'s—☉'s long.)—☾'s Anom.

Now, 2 (☾'s—☉'s long.) for 6 tithis is given in Table XVI-A as

either 11d. 7gh. 19p. or 38d. 34gh. 36p. 11 7 19

The given ☾'s anom. has to be deducted from either of these data 3 11 16

7 50 3

Since the last anomaly is in the second quarter, we deduct it from 13 46 40

[*vide* Rule (2) *supra*.]

5 56 37 (D)

This is the argument for Table XVI-C.

The equation acc. to Table XVI-B. for 3d. 11gh. 16p. is —20gh. 33p.

Do. do. Table XVI-C. for 5d. 56gh. 37p. is — 6gh. 27p.

Total... —27gh. 0p. (E)

We compare the last equation (E) with (B) found *supra* from Table IX-*g* (*i.e.*, 16gh. 40p).

Clearly, our Sūrya Siddhānta equation is too small and we must try again with—27gh. 0p. (E) in lieu of 16gh. 40p. (B). That is, we must diminish the argument for Table XVI-B by 10gh.20p and increase the argument for Table XVI-C by the same amount.

Our new arguments for Table XVI-B will be 3d. 0gh. 56p. and its eqn.—19gh. 38palas.

Do. do. Table XVI-C will be 6d. 6gh. 57p. and its eqn.— 6gh. 30palas.

Total... —26gh 8p. (F)

This time we began with —27 gh. (E) and ended with —26 gh. 8 p. (F) which shows that our last argument for Table XVI-B must be increased by 1 gh. and our last argument for Table XVI-C correspondingly diminished.

Our new argument for Table XVI-B is 3d. 1gh. 56p. and its equation —19gh. 43p.

Do. do. Table XVI-C is 6d. 5gh. 57p. — 6gh. 30p.

—26gh. 13p. (G)

We began with $-26\text{gh. } 8\text{p.}$ and ended with $-26\text{gh. } 13\text{p. (G)}$.

We may be satisfied with this result. Our final equation will be $-26\text{gh. } 13\text{p.}$

(1) Sun's equation of the centre and \odot 's annual eqn. + Variation	$-11\text{gh. } 23\text{p.}$
(2) Moon's do. do. and \odot 's evection	$-26\text{gh. } 13\text{p.}$
	<hr/>
	$-37\text{gh. } 36\text{p.}$

This being deducted from our mean tithi, we have

mean tithi or elongation	Aug. 37.	1gh. 48p.
		<hr/>
		$-37\text{gh. } 36\text{p.}$

Aug. 36. 24gh. 12p.

To which *add* for local time (Table XIII); $1651'' = 1\text{gh. } 9\text{p. (Lat. } 13^\circ, 146\text{th day)}$.

Aug. 36 or Sep. 5, 25gh. 21p.

which is about 2 ghaṭikas in excess of the time given in *Drig-ganita* panchāṅgams for the year *Saumya* (A.D. 1909—10), whereas the *Siddhānta* panchāṅgams give 12 or 13 ghaṭikas more as the ending moment of bahula Shashṭhi in Nija Śrāvana of that year.

120. Ordinarily, the greatest difference between *Siddhānta* and *Drig-ganita* panchāṅgams occurs from the 6th to the 10th tithis. For the reason of this divergence, the reader is referred to the article on the *Moon* in the *Encyclopedia Britannica*, where we are told that ancient astronomers were unacquainted with the evection and variation, as perturbing elements of the lunar theory.

121. If the reader wishes to know how *Drig-ganita* panchāṅgams obtain their tithis from the *Nautical Almanac*, we may state the process in a very few lines:—

Taking the above example, we look out in the *Nautical Almanac* the \odot 's and \odot 's longitude at Greenwich mean noon on two or three neighbouring days, say 4th, 5th and 6th September 1909.

(1) September 1909.	(2) \odot 's long. at noon.			(3) \odot 's long. at noon.			(4) \odot 's elongation.			(5) \odot 's elongation for 24 hrs.		
	°	'	"	°	'	"	°	'	"	°	'	"
4	41	14	39.3	161	17	19.1	240	57	20.2			
5	55	25	16.2	162	15	29.9	253	9	46.3	12	12	26.1
6	69	11	33.6	163	13	42.8	265	57	50.8	12	48	4.5

Columns 2 and 3 of this table are extracted from the *Nautical Almanac* for 1909. Column 4, Moon's elongation, is of course column 2 less column 3, and the difference between the elongations of two successive days is entered in column 5. The tithi we want is Bahula Shashṭhi, *i.e.*, the 21st tithi which ends when the Moon's elongation is $21 \times 12^\circ = 252^\circ$. This, we find, was sometime before Greenwich noon on 5 September 1909. Since the Moon's exact elongation at Greenwich noon on 5th September 1909 was $253^\circ.9'46.3''$ which is $1^\circ 9' 46.3'' (= 1.1628^\circ, \text{ by Table XIX})$ more than we require, we have to deduct the time taken by the Moon to effect this elongation. This last time may be determined by working out a proportion either to the elongation of the previous 24 hours ($12^\circ 12' 26.1'' = 12.2072^\circ$ by Table XIX) or to the elongation of the next 24 hours ($12^\circ 48' 4.5'' = 12.8011^\circ$ by Table XIX). The result is (1) $\frac{1.1628}{12.2072} = .0953 \text{ day}$, or (2) $\frac{1.1628}{12.8011} = .0908 \text{ day}$.

If we deduct the first result from Greenwich noon, we have September 4·9048, to which we add ·4605 day for the difference between Greenwich astronomical and Ujjain Lankā time, and again add 1651 seconds or $27\frac{1}{2}$ minutes or ·0190 day for the difference between Ujjain time and Madras time (Table XIII; lat. 13° , 146th day). Net result, September 4·9048 + ·4605 + ·0190 = September 5·3843 or 23 ghat. 4 palas on 5th September 1909.

On the other hand, if we deduct the second result, ·0908 day from Greenwich noon, 5th September 1909, we have September 4·9092 to which we add, as before,

$$\begin{array}{r} + \cdot 4605 \\ + \cdot 0190 \\ \hline \end{array}$$

and also (for Madras standard time) 9 minutes + ·0062, and

we have, as the final result, September $\underline{5\cdot3949}$

or (by Table XIX) **23** ghaṭikas **40** palas, which differs by only 13 palas from the result given in the Nungumbaukam Panchāṅgam.

Our working shows that a difference of about 15 palas might result according as we took the proportional part from the elongation of the previous or of the following 24 hours.

122. This is very much in favour of the *Drig-ganita* method, even if exact astronomical accuracy is wanted, and that method only postulates the possession of a Nautical Almanac. In the absence of a Nautical Almanac, or for years long past or a long way ahead, we can obtain a very fair approximation to Nautical Almanac results by means of the modern equations in our Table XVI.

CHAPTER XVIII.

THE MUHAMMADAN YEAR.

123. The Muhammadan Era, commonly called *Hejra* or *Hijra*, is dated from Friday, 16 July, 622 A.D., the day of the Flight of the Prophet.

The Muhammadan calendar is not luni-solar like the Indian Calendar, but strictly lunar. The length of the synodical month according to the Muhammadan calendar is 29 days 12 hours 44 minutes. The 3 seconds reckoned in addition in the Hindu calendar are neglected in the Muhammadan. The months are alternately 29 and 30 days long, which, again, if carried out uniformly, would result in an error of 44 minutes per month, which, in 360 months, or 12 lunar years, would amount to $\frac{360 \times 44}{60 \times 24} = 11$ days. These 11 days are accordingly added to the last month of the calendar in 11 out of every 30 years, and the year containing an extra day is, from analogy, sometimes called a leap year.

124. Every 30 years form a cycle in the Muhammadan calendar. The years which have 355 days, instead of 354, are in some countries the 2nd, 5th, 7th, 10th, 13th, 15th, 18th, 21st, 24th, 26th and 29th. Elsewhere, the 2nd, 5th, 8th, 10th, 13th, 15th, 19th, 21st, 24th, 27th and 29th are kept as leap years.

It will be noticed that the difference of usage is as regards the 8th, 19th and 27th years in each cycle.

Our Muhammadan Calendar (Table XV) assumes that the 8th, 19th and 27th years in each cycle are leap years, and in paragraph 4 of the explanation at page 197 of the Tables we have shown clearly how Table XV should be used by those who observe the 7th, 18th and 26th years in each cycle as leap years.

125. All the books that deal with the Muhammadan Calendar mention the above difference of usage, but they do not give the reason of it. The reason is, however, not far to seek.

If we write down the accumulated error which remains at the end of each year by reason of the neglect to take account of 44 minutes, which we adverted to in the first section of this chapter, we obtain the following result under the system of reckoning the 8th, 19th and 27th as leap years :—

Year.	Error.	How error is corrected by leap year.	Year.	Error.	How error is corrected by leap year.
1st year, 8 hrs. 48'			16th year, <i>Nil</i> ,		
2nd year, 17 hrs. 36'	1st day added by leap year.		17th year, 5 hrs. 36'		
3rd year, 2 hrs. 24'			18th year, 14 hrs. 24'		
4th year, 11 hrs. 12'			19th year, 23 hrs. 12'	7th day added by leap year.	
5th year, 20 hrs. 0'	2nd day added by leap year.		20th year, 8 hrs. 0'		
6th year, 4 hrs. 48'			21st year, 16 hrs. 48'	8th day added by leap year.	
7th year, 13 hrs. 36'			22nd year, 1 hr. 36'		
8th year, 22 hrs. 24'	3rd day added by leap year.		23rd year, 10 hrs. 24'		
9th year, 7 hrs. 12'			24th year, 19 hrs. 12'	9th day added by leap year.	
10th year, 16 hrs. 0'	4th day added by leap year.		25th year, 4 hrs. 0'		
11th year, 0 hrs. 48'			26th year, 12 hrs. 48'		
12th year, 9 hrs. 36'			27th year, 21 hrs. 36'	10th day added by leap year.	
13th year, 18 hrs. 24'	5th day added by leap year.		28th year, 6 hrs. 24'		
14th year, 3 hrs. 12'			29th year, 15 hrs. 12'	11th day added by leap year.	
15th year, 12 hrs. 0'	6th day added by leap year.		30th year, <i>Nil</i> .		

We see that by observing the 8th, 19th and 27th years as leap years, a day is added by means of a leap year in order to avoid the error accumulating to more than *1 day* at the end of the following year.

Those that observe the 7th, 18th and 26th as leap years add a day by means of a leap year in order to avoid the error accumulating to more than *half a day* at the end of the following year. This in fact is what is done by both the schools at the end of the 15th year.

126. The months and the number of days in each are as follows :—

Month.	No. of days.	Day of Commencement reckoning from beginning of year.	Month.	No. of days.	Day of Commencement reckoning from beginning of year.
1. Muharram ...	30	...	7. Rajab ...	30	177
2. Safar ...	29	30	8. Shaban ...	29	207
3. Rabi-ul-awwal ...	30	59	9. Ramzan ...	30	236
4. Rabi-ul-akhir or Rabi-us-sani ...	} 29	89	10. Shawwal ...	29	266
5. Jumadal-awwal ...	30	118	11. Zilkada ...	30	295
6. Jumadal-akhir or Jumad-us-sani ...	} 29	148	12. Zil-hijja Do. (when inter- calary). ...	29 30	} 325

All readers are familiar with the names of two of the Muhammadan months, *Muharram* and *Ramzan*, and all are equally familiar with the fact (due to the strictly lunar character of the year) that Muharram is liable to occur at any part of the solar year.

127. The Muhammadan day is reckoned from sunset to sunset, and the first day of Muharram is that on which the moon is for the first time visible at sunset after new moon. This is called the heliacal rising of the moon. Our readers are familiar with the Muhammadan usage of observing the heliacal rising of the moon from eminences of any sort, and passing word as soon as she is seen, so as to give notice that Muharram has commenced.

To the reader who is by this time quite at home among tithis and their ending moments, we would quote the following rule from Messrs. SEWELL & DIKSHIT'S *Indian Calendar* :—

“ It is well to note that where the first tithi of a month ends not less than 5 ghatikas before sunset, the heliacal rising of the moon will probably take place on the same evening ; but where the first tithi ends 5 ghatikas or more after sunset, the heliacal rising will probably not take place till the following evening. When the first tithi ends within these two periods between 5 ghatikas before and 5 ghatikas after sunset, the day of the heliacal rising can only be ascertained by elaborate calculations ”.

Where so much depends upon sunset and moonrise, it is obvious that places with different longitudes and latitudes will often not agree in regard to the exact date of commencement of the Muhammadan year.

N.B.—Further directions for the use of our Table XV relating to the Muhammadan year are given as a concluding note to that table, *vide* Tables, p. 197.

Before commencing Part II of our work, which gives special hints with examples regarding the use of each of the more important tables, we take the opportunity to insert a note on Broken Periods :—

Note on Broken Periods.—It is very important that the reader, dealing with the Indian or any other calendar, should know thoroughly how to reckon broken periods. It is generally a question of addition or subtraction, but unless one goes through the process with reflection, there is always a danger of adding or subtracting 1 too much.

To take the simplest case, how many days are there from Friday in one week to Tuesday in the next ? Most people would use their fingers in such a case and answer ‘4’ or ‘5’ according as they began the reckoning with Friday or with Saturday. Now, such uncertainty is fatal to exact reckoning, and we should therefore follow certain rules whereby we may avoid all uncertainty.

First of all, we must always note the meaning of the question with reference to the *next sub-division of the broken period* : that is, in this case whether the meaning is from a particular hour on Friday to the same hour on Tuesday. This makes the meaning quite clear. From 6 a.m. on Friday to 6 a.m. on Tuesday following, there are 4 days: and the proper way to answer the question is to convert Friday and Tuesday into week-day figures 6 and 3, and to add a whole period (7) to 3 before deducting 6. Thus, $7+3=10$. From 10 take 6, and we have the answer, 4 days. Some exercise is necessary in order to do even these simple week-day problems correctly.

The rule about *adding a whole period* when you have taken to reckon from a fraction of one period to a fraction of the next is very important. How many days are there from 23rd October in one year to 15th March in the next, the second being a leap year. If we refer to Table VIII we shall find that 23rd October is 296 days from 1st January, and 15th March (where we have had to pass 29th February) is 75 days. Add 365 to 75. Total 440. Deduct 296. Answer, 144 days.

If the 1st of a Tamil month be the 15th July, what will be the 7th of the Tamil month ? In such cases we must *make the same addition to or the same deduction from the one side as we make in regard to the other*. In the example before us, the addition to be made is 6, and the answer, 21st July.

If the 1st of a Tamil month be the 15th July, what will be the 29th of the Tamil month. We add 28 to each side. Therefore the answer is $15+28=43$ rd July, from which we deduct the whole of the completed period (July=) 31 days. Final answer, $43 \text{ minus } 31=12$ th August.

PART II.—USE OF THE TABLES.

CHAPTER XIX.

USE OF EPHEMERIS OR TABLE XII (Solar Dates).

128. The main interest of the present work to the general Indian reader will lie in its enabling him to discover for himself the chief data given in Panchāngams for any year between B.C. 1 and A.D. 2000. Panchāngams in India are strictly confined to the year to which they relate, and the greatest difficulty is sometimes felt in verifying an Indian date only two or three years' old, while forecasting a date a year or two hence for the purpose of a marriage or any other future event is a matter of equal difficulty. By the use of the present work, future and past events can be dated according to the rigour of the Indian calendar and that with the greatest ease.

129. For the use of the general Indian reader, a special table called Table XII has been inserted in the present work, which gives solar dates, new moons and lunar and solar anomalies for the eighty years ending with A.D. 1919, *i.e.*, for 70 years before 1910 and 10 years after that date. Before instructing the reader how to look up dates in this special table, we shall give a few brief hints as to Indian time.

130. Indian time is kept in *ghatikas* (Tam. *naligais*) or sixtieth parts of a day, each *ghatika* being equivalent to 24 minutes of English time ($\frac{2}{5}$ of an hour), and in *palas* (Tam. *vinadis*) or sixtieth parts of a *ghatika*, each *pala* being equivalent to 24 seconds of English time. The *ghatikas* and *palas* are reckoned, not from midnight to midnight as in English time, but from sunrise to sunrise. Now, as the moment of sunrise depends on the latitude and longitude of each place, there should, strictly speaking, be as many *panchāngams* as there are places in India. Indian astronomers get over this difficulty by calculating time in the first place according to one central latitude and longitude, and then applying the necessary corrections in order to deduce the time for other places. The central latitude is the Equator and the central longitude is that of Ujjain ($75^{\circ} 46' 6''$ East of Greenwich) where there was an ancient observatory. To combine the central latitude and the central longitude, they imagined an island called Lankâ in the Indian Ocean, situated on the equator and having the same longitude as Ujjain. This Lankâ is, of course, not Ceylon.

131. The standard time in the Indian calendar is therefore called Lankâ time, and 6 a.m. at Lankâ is the mean sunrise from which all times are, in the first instance, calculated. The time marked in Table XII is invariably Lankâ time, *i.e.*, time reckoned from 6 a.m. at Lankâ. The correction to be made at the present epoch (A.D. 1840 to A.D. 1920) in order to deduce the actual time from local sunrise at thirty of the most important places in India is given in seconds of time in the column "Total Correction" in Table XIII. In no calendar that we are aware of is the correction worked out for so many places in India in a shape ready for instant use.

132. We are now ready to use Table XII, and we will first learn how to look up solar dates in that table. Solar dates, *i.e.*, dates based solely on solar months, are in use in the Tamil and Malayalam tracts of Southern India (*i.e.*, in the Tamil Districts, in Malabar, in Travancore, and in Cochin) and in Bengal: elsewhere lunar dates are chiefly in use.

133. A solar date is thus cited :—

(Tamil) *Sâdhârana* varusham, Âni 15.

(Malayalam) *Kollam* 1086, Dhanus 20.

(Bengal) *San* 1316, Mâgha 28.

134. TAMIL SOLAR DATES.—The year *Sâdhârana* is one of 60 years comprised in Jupiter's cycle. The revolutions of the cycle from A.D. 967 to A.D. 1926 are clearly indicated with corresponding English years in Table I. The reader will find that in the current cycle *Sâdhârana* is A.D. 1910, and this fact is also indicated in Table XII under A.D. 1910.

135. Looking down the columns in Table XII under A.D. 1910, we find the following entries against *Ani* :—

3 Je. 14. 32 6 Jl. 15.

These abbreviated entries give us the following useful information :—

The month of *Ani* in A.D. 1910 begins on June 14, the day of the week being 3, *i.e.*, Tuesday.

The same month of Âni contains 32 days, the 32nd day being July 15, the corresponding day of the week being 6, *i.e.*, Friday.

Now, to deduce the 15th day of *Ani*, the first being given, is an easy matter : for we have only to add 14 to "3 June 14" and we get "17 June 28."

Now "17" for the day of the week is obviously 3, for we must cast out sevens, *i.e.*, whole weeks, when the figure indicating the day of the week exceeds 7.

We thus answer : "*Sâdhârana*, Âni 15" is Tuesday, 28 June, A.D. 1910.

136. Tamil years may also be quoted by *Kaliyuga* or *Saka* eras, and the years belonging to these eras are also indicated opposite the A.D. year in Table XII. We there see that A.D. 1910 corresponds to Kaliyuga 5011 and Saka 1832.

137. The reader should now note a peculiarity in the citation of Indian years, namely, that as a rule the years are "expired", not "current". To understand the difference between these expressions, we go back to the first year of Kaliyuga, which began on 18th February 3102 B.C. We are apt to call that the beginning of the first year : but Hindu reckoning prefers to call it the beginning of the year 0, and what it calls the year 1 is really what we should call the second year, *i.e.*, the "expired" year 1, and so the difference of 1 runs throughout the reckoning between "expired" (*gata*) and "current" (*varttamâna*) years. In the present work, following the bulk of the authorities, all purely Indian eras (except the Kollam Ându) are expressed in expired years, and A.D. and Kollam years are alone expressed as current years. When the reader wants a "current" year for an Indian era (except Kollam), he should add 1 to the figure given in this work.

138. MALAYALAM DATES.—We have just stated that the Kollam or Malayalam era reckons current not expired years : and we find from Table XII that Kollam Ându 1086, cited in our example, began in South Malabar in the month of CHINGAM (Tam. *Avani*) A.D. 1910 and in North Malabar in the next month KANNI (Tam. *Purattâsi*). To help the memory, we may recollect that “*Simha*” (the sign of the zodiac from which *Chingam* is derived) and “*South Malabar*” begin with “**S**”. In fact “**S-M**” may stand equally for “Singa**M**” and “**S**outh **M**alabar”; while both “**N**. Malabar” and “**Kanni**” contain a strong “**n**” (unlike the soft nasal *n* in *Chingam*.)

139. We find from Table XII that “Kollam 1086, Dhanus” begins on Thursday, 15 December 1910, and ends (the number of days in Dhanus being 30) on Friday, 13 January 1911. Now between 20 Dhanus and 30 Dhanus the difference is 10, and so we deduct 10 from 13 January 1911 and get 3 January 1911 as the equivalent of “Kollam 1086, Dhanus 20”. To find the day of the week, we deduct 10 from 14 (next higher multiple of 7) *plus* 6, that is from 20, and we get 10, which is equivalent to 3 Tuesday.

Bengal Solar Dates.

140. Our specimen date is San 1316, Mâgha 28.

We find from Table XII, p. 151, that San 1316 (expired) is the Solar year corresponding to A.D. 1910–11 ; and from Table XII, p. 136, that the 1st of Solar Mâgha falls on Sunday, 15 Jan. 1911 ; while the 29th of Solar Mâgha (the last day of the month) is Sunday February 12. Obviously the 28th Mâgha is Saturday, February 11, A.D. 1911.

N.B.—Our Table XII treats the B. San years as *expired*. It will be seen, however, from Sec. 112 (6) that B. San years are usually cited as *current*. To convert the *expired* years in Table XII into *current*, add, as usual, 1.

141. The reader will note that each Bengal Solar month has the same name as the Lunar month commencing during that Solar month ; whereas in the Tamil country each Solar month is named after the Lunar month which began *before* the Solar month in question. This is an important practical difference to be borne in mind in calculating Bengal and Tamil Solar dates. For instance Tamil *Kârtigai* is the next month to Bengal Solar Kârttika.

N.B.—All Solar months were originally named from the corresponding Lunar months ; and each Lunar month was in turn named from the nakshatra in which the moon ordinarily is at Full Moon in that month. See Table XI.

Commencement of the Solar Month or Sankranti.

142. The astronomical commencement of a solar month is the moment of *Sankrânti*, i.e., the moment when the sun enters a sign of the Zodiac. To ascertain the moment of Sankrânti, we must add up two figures, namely, (1) the ghaṭikas and palas (and if we like the day of the English month) entered in Table XII against “Commencement of the Solar Year”, and (2) the days, ghaṭikas and palas entered in the Eye-Table under the month of which we wish to know the Sankrânti or moment of commencement.

Thus, in the case of the three months which we selected as examples, the Sankrântis are as follows :—

Commencement of Solar Year corresponding to A.D. 1910-11.	13 April 1910, 6 ghat. 3 palas.	12 ghat. 13 palas.
Sankrânti or moment of commencement of Tamil <i>Ani</i> .	62 days 21 ghat. 20 palas.	
Do. do. Malayâlam <i>Dhanus</i>	246 days 19 ghat. 9 palas.	
Do. do. Bengal Solar <i>Mâgha</i>		275 days 38 ghat. 13 palas
Sankrânti of Tamil <i>Âni</i> , A.D. 1910 :	62 days 27 ghat. 23 palas.	... (1)
or 75 days (counting from 1 April 1910)	27 ghat. 23 palas	... (2)
Sankrânti of Mal. <i>Dhanus</i> , A.D. 1910 :	246 days 25 ghat. 12 palas	... (3)
or 259 days (counting from 1 April 1910)	25 ghat 12 palas	... (4)
Sankrânti of Beng. Solar <i>Mâgha</i> A.D. 1910-11 :	275 days 50 ghat. 44 palas	... (5)
or 288 days (counting from 1 April)	50 ghat. 44 palas.	... (6)

143. Results (2), (4) and (6) enable us to express the three Sankrântis in terms of the English Calendar : for by reference to Table VIII we find that—

(1) *Ani* Sankrânti, 75 days from 1 April 1910, is 14 June 1910, 27 g. 23 p.

(2) *Dhanus* Sankrânti, 259 days from 1 April 1910, is 15 Dec. 1910, 25 g. 12 p.

(3) *Mâgha* Sankrânti, 278 days from 1 April 1910, is 13 Jan. 1911, 50 g. 44 p.

These results agree with the commencement of Tamil *Ani* and Malayâlam *Dhanus* for 1910 as entered in Table XII, but the Sankrânti of Bengal Solar *Mâgha*, as above determined (13 January 1911), is not the commencement of that month as entered in Table XII, p. 136 (15 January 1911).

144. To account for this difference, we must observe that though the moment of a Solar Sankrânti is the same all over India for the same Siddhânta, the commencement of the corresponding month for *civil* purposes is not necessarily the same all over India. The following rules on the subject are adopted from Messrs. **Sewell & Dikshit's** "Indian Calendar".

(1) In Orissa the Solar month of the *Amlî* and *Vilâyati* eras begins on the day of Sankrânti, at whatever moment of the day the latter may happen. Accordingly in Orissa, the three Solar months above named would begin on the Sankrânti days, *i.e.*, the 14th June 1910, the 15th December 1910 and 13th January 1911 respectively.

(2) In Bengal, when the fraction of the day at which the Sankrânti happens does not exceed 45 ghatikas, the Solar month begins on the next day : and when the Sankrânti occurs after 45 ghatikas, the Solar month begins on the next day but one. Accordingly the Bengal months corresponding to *Ani* A.D. 1910 (Bengal Solar *Ashâdha*) and to Malayâlam *Dhanus* A.D. 1910 (Bengal Solar *Pausha*) will commence on 15 June 1910 and 16 December 1910 respectively and not on 14 June and 15 December 1910 (the days of the Sankrânti), while Bengal Solar *Mâgha* A.D. 1910-11 will not commence till 15 January 1911 (*i.e.*, 2 days after the Sankrânti).

(3) In Southern India, in the Tamil country, when the fraction of the day at which the Sankrânti occurs does not exceed 30 ghatikas, the Solar month begins on the same day. That is why the beginning of Tamil *Ani* A.D. 1910 coincides with the day of the Sankrânti, 14 June 1910. When the Sankrânti occurs after 30 ghatikas, the Solar month begins on the

next day. This is why the Tamil month *Tai*, corresponding to Bengal Solar *Māgha*, A.D. 1910-11 is shown in Table XII as having commenced on 14 January 1911, *i.e.*, the day after the Sankrānti.

145. The authors of the "Indian Calendar" also state that in Malabar, when the Sankrānti occurs after 18 ghaṭikas, the Solar month commences on the next day. If this were so, Malayālam *Dhanus* in A.D. 1910-11 would commence on 16th December 1910. As a matter of fact, however, all the Malayālam Panchāngams show *Dhanus*, A.D. 1910-11, as commencing on the same day as the Tamil *Mārgali*, *i.e.*, on 15 December 1910. This fact imports an element of doubt into the so-called "Malabar rule" laid down by Messrs. SEWELL & DIKSHIT; and till the contrary is shown to be the case, we must assume that the Tamil rule is followed in Malabar.

146. The Bengal rule laid down by the same authorities is practically applied in Table XII, page 136 (Ephemeris for Bengal). Whatever may be the rules as regards the commencement of a civil month *in any part of India*, the data given in Table XII and the Eye-Table will enable any one to apply his own *civil* rule with certainty. The dates entered in Table XII for the commencement and end of Solar months apply in strictness only to Southern India and to the *Ārya Siddhānta*. For the *Sūrya Siddhānta* and for tracts where a different *civil* rule from that in force in Southern India is followed, suitable corrections may have to be applied, as in Table XII, page 136 (Ephemeris for Bengal).

147. To illustrate the difference between Sankrāntis according to *Ārya* and *Sūrya* Siddhāntas, we will give a practical example from a case which recently came under the author's notice. A person produced a Tamil horoscope which contained among other data the following note on the date of his birth:—

"A.D. 1856, June 28, *Ani* 16."

A reference to the Tamil panchāngams of the year A.D. 1856 showed that according to *all* of them, 28 June 1856 A.D., corresponded to 17th, not to 16th *Ani*.

The apparent discrepancy was explained by the sole fact that the person, though now residing in Southern India, was born at *Belgaum* where the *Sūrya Siddhānta* is followed, and where presumably the horoscope was cast by a Tamil Astrologer.

The Solar year corresponding to A.D. 1856 commenced on 11 April A.D. 1856, at 14 ghaṭ. 6 palas according to *Sūrya Siddhānta* (Table X) and at 7 ghaṭ. 55 palas according to *Ārya Siddhānta*. (Table XII.)

For *Ani* Sankrānti by the Tables II and XIX, we have to add 62 days 21 ghaṭ. 20 palas according to *Sūrya Siddhānta*, and 62 days 19 ghaṭ. 34 palas according to *Ārya Siddhānta*.

∴ According to *Sūrya Siddhānta*, *Ani* Sankranti occurred on the 73rd day (reckoned from 1 April 1856) at 35 ghaṭ. 26 palas (*i.e.*, after 30 ghaṭ.)

According to *Ārya Siddhānta*, *Ani* Sankrānti occurred on the 73rd day (reckoned from 1 April 1856) at 27 ghaṭ. 29 palas (*i.e.*, before 30 ghaṭikas).

148. In accordance with the *civil* rules for Solar months current in the Tamil country (Sec. 144 *supra*) the month of *Ani* in A.D. 1856 began (according to *Sūrya Siddhānta*) on the 74th day reckoned from 1 April 1856, *i.e.*, on the 13th June 1856 (*vide* Table VIII), and the 16th *Ani* was $13 + 15 = 28$ th June 1856.

According to *Arya Siddhânta*, the month of *Ani* in A.D. 1856 began on the 73rd day reckoned from April 1856, *i.e.*, on 12th June 1856 (*vide* Tab. VIII) and the 17th of *Ani* was $12 + 16 = 28$ th June 1856.

149. This example shows that there could easily be a difference of 1 day between Solar dates in one part of the country and another.

It also shows that such differences cannot be accounted for by the ordinary *Jantris* and *Panchângams* but must be explained by recourse to the fundamental principles of the Indian Calendar.

CHAPTER XX.

USE OF EPHEMERIS OR TABLE XII for Lunar Tithis.

150. Even in those parts of the Indian Continent where the Solar Calendar is used for *civil* purposes, lunar tithis are observed for *religious* purposes: elsewhere the civil as well as the religious calendar is *lunar* and is regulated by tithis, instead of by days of the month.

151. Like the lunar calendar of the Jews, and unlike that of the Muhammadans, the Hindu calendar may be described as luni-solar since all its periods of time, though regulated by the movements of the moon, are made to fit in with divisions of the Solar Year. A lunar tithi is not counted at all unless the Sun rises upon it. A Tithi, Nakshatra, or Yoga may begin or end, at any moment of the day, but the Tithi, Nakshatra, or Yoga pertaining to a day is that which is current *at sunrise*. A lunar month takes its name from the next following *Solar Sankrânti*: if there are two lunar months entitled to derive their name from a single Solar Sankrânti, they both receive the same name and one, the first, is called *adhika*. On the other hand, if a new moon is followed by two Sankrântis before it is followed by another new moon, the lunar month which would ordinarily have been derived from the second of the two Sankrântis is suppressed and is said to be *Kshaya*, that is, in defect. Lastly the lunar year, beginning in the month of *Solar Chaitra*, which is itself the last month of the *Solar* year, is named after the *next Solar Year*. These considerations suffice to prove that the Hindu lunar year is properly a luni-solar year.

152. Lunar periods of time are characterized by an element of certainty or rather of palpable evidence, not found in solar periods, and in another sense the actual moments of lunar phases are marked by much greater uncertainty than Solar Sankrântis. We will explain each of these propositions.

153. *Palpable evidence of lunar periods.*—We cannot visibly perceive in the heavens the fact that the sun has completed any definite stage in his annual course: but new moon, when the moon's longitude is the same as the sun's, is a patent fact: so are full moon and each quarter of the lunar month. There cannot be a difference of a whole day between the moment of new moon in one part of the country, and the same moment in another part, just as we saw there might be in the commencement of a solar month. If an inscription states that a certain tithi fell on a Monday, and by calculating backwards we trace the tithi to a Saturday we may be quite certain that there is some error in the inscription.

154. On the other hand, there are greater fluctuations in the moon's than in the sun's movements, in the sense that the actual time of new moon may be as much as 14 hours before or 14 hours after the time of *mean* new moon. Two calculations are therefore necessary to determine the time at which the moon reaches any particular stage of her course: we must first ascertain the *mean* time, which is simply the expected time, taking an average over very long periods; and then we must calculate the *actual* time by making a correction to the mean time according to the moon's and sun's *anomaly* at the particular moment. Both these operations can be performed very easily and very accurately, that is to say, in exact accordance with the Siddhântas, by means of the tables in the present work. The correction is called a correction for the sun's and moon's *equation of the centre*. There are also one or two other minor corrections recognized in modern astronomy, but the Siddhântas do not make them. (See sections **121** to **127** *supra*.)

155. In the case of new moons from A.D. 1840 to A.D. 1920, it was thought best not to give the reader even the slight trouble of calculating the anomaly and the equation of the centre; and the exact moment of each new moon during these eighty years as well as the *exact* day of its occurrence, where it differs from the mean date, is entered in separate columns, in Table XII "General Ephemeris." Here, however, the day and fraction of a day marking the occurrence of *mean* new moon, and the sun's and moon's anomalies at the moment of mean new moon are also given, as they are necessary for the calculation of tithis between one new moon and another.

156. Supposing now the reader wishes to ascertain the exact time of new moon in July 1910. He finds the following entries:—

(Tab. XII) A.D. 1910.

Date and fraction of day of Ashadha new moon.	Actual moment of new moon.
--	----------------------------

(5) July 7, 10 ghatikas 57 palas;	July 6, 49 ghatikas 55 palas.
-----------------------------------	--------------------------------------

Moon's and Sun's anomaly in days, ghatikas and palas.

Sun's anomaly: 84 days 58 ghatikas 29 palas.

Moon's anomaly: 4 days 29 ghatikas 13 palas.

157. As regards the *exact* moment of occurrence of new moon in July 1910, there is no difficulty at all; for it is Wednesday, 6th July 1910 (the **date** of mean moon as well as the *week-day* has to be diminished by one, by reason of the anomalies) and the time of day is **49 ghatikas 55 palas**.

158. This, as explained already, is mean Lankâ time. If now you wish to know the *true local time* of the *actual* moment of new moon in July 1910, and if you happen to be at one of the 30 places named in Table XIII, all you have to do is to apply to Lankâ time the correction indicated in the column "Total correction" for the day of the solar year entered under the new moon date in Table XII.

159. Supposing you are at Tanjore, the correction for the 84th day is + 2478 seconds of time, *i.e.*, 103 palas or + 1 ghaṭika 43 palas. Adding this to Lankâ time, 49 ghaṭikas 55 palas, we have **51** ghaṭikas **38** palas, exact time at Tanjore according to Sūrya Siddhânta. If now you wish to know how far this time agrees with modern astronomical computation, you have merely to look at the time of new moon according to the Tiruvâdi Almanac (Mr. Śrauti's Panchāṅgam) which is calculated from the English Nautical Almanac and is reduced to the latitude of Tanjore, and you find there "6th July 1910, **52** ghaṭikas **10** palas", showing a difference of 32 palas. This difference of 32 palas is due to lunar acceleration which has changed since the date of the Sūrya Siddhânta. (*Vide* Sec. 2.)

160. If you are at Madras (lat. 13°) you will find the correction according to Table XIII to be + 2200 seconds of time, *i.e.*, + 92 palas or + 1 ghaṭika 32 palas. Adding this to mean Lankâ time, you get (49 ghat. 57 palas + 1 ghat. 32 palas =) 51 ghat. 29 palas. The time according to the "College" Panchāṅgam (Mr. Raghavachari's) is 52 ghaṭikas 33 palas, showing a difference of 1 ghaṭika 4 palas. The increased difference, as compared with Mr. Śrauti's Panchāṅgam, is mainly due to two facts, (1) The correction for Madras local time is less than that for Tanjore local time by 11 palas, (2) Madras standard time, which is shown in the College Panchāṅgam, is nine minutes or 22½ palas in advance of Madras Local time. There is still, however, an unexplained difference of a few palas between our tithi and that of the College Panchāṅgam.

161. Next, suppose the reader wishes to know the ending moment of the 8th tithi or *ashtamî* in the bright fortnight following the new moon of 6th July 1910. For this we have to calculate first of all the *mean* ending moment of the 8th tithi, and then its *actual* ending moment. The mean ending moment is given by adding the collective duration of 8 tithis according to the Eye-table to the *mean* moment of new moon.

(Tab. XII) Mean moment of new moon ... A.D. 1910, 7 July 10 ghat. 57 palas.

Add collective duration of 8 tithis 7 days 52 ghat. 29 palas.
according to the Eye-table.

A.D. 1910 15 July 3 ghat. 26 palas.

162. This, then, is the *mean* ending moment of the 8th tithi or *ashtamî*. For the *actual* ending moment of the same tithi, we first of all add the collective duration of 8 tithis to the moon's and sun's anomaly noted in Table XII under the new moon of 7 July 1910.

Moon's anomaly			Sun's anomaly		
4 days	29 ghat.	13 palas	84 days	58 ghat.	29 palas.
Add collective duration of 8 tithis.	7 days	52 ghat.	7 days	52 ghat.	29 palas.
	12 days	21 ghat.	92 days	50 ghat.	58 palas.
Deduct ☉'s Eqn.		-2 ghat.			20 palas
Net ☾'s anom.	12 days	19 ghat.			22 palas

163. According to the Eye-table we find the Sun's Equation for an anomaly of 92 days, 51 ghat. to be *minus* 2 ghat. 20 palas, and we deduct this equation from the moon's anomaly already found. The Equation of the centre for the moon's net anomaly of 12 days 19 ghat. 22 palas is, by the Eye-table, *minus* 9 ghaṭikas.

164. The sum of moon's and sun's Equations :

- 2 ghat.	20 palas.
- 9 ghat.	
- 11 ghat.	20 palas.

165. If 11 ghaṭikas be deducted from the mean ending moment of the 8th tithi, we obtain, as the *actual* ending moment of *sukla ashtamī*, 14 July A.D. 1910, 52 ghaṭikas after sunrise.

166. This is Lankā time. If now we wish to know the ending moment of the tithi in true local time, say at Madras (Lat. 13°), all we have to do is to apply the figure entered in the column "Total correction" under Madras (Lat. 13°) against the 92nd day of the Solar Year in Tab. XIII. The correction being + 2095 seconds or + 87 palas, that is + 1 ghat. 27 palas, the ending moment of **Sukla ashtami**, 14 July 1910, at Madras, is (52 ghat. + 1 ghat. 27 palas =) 53 ghat. 27 palas. The "College" Panchāṅgam gives 52 ghat. 33 palas.

167. We will now show the reader how to calculate successive tithis from the Eye-table and Table XII combined. The duration of 1 tithi, according to the Eye-table, is 59 ghaṭikas 4 palas, that is, 1 day less 1 ghaṭika *plus* 4 palas. Bearing this in mind, we shall proceed to calculate the successive tithis after new moon, 7 July 1910; the mean time of which is 10 ghat. 57 palas, or nearly 11 ghaṭikas.

A.D. 1910 Tithi		July										August																
Mean ending of tithi.		☉'s Anom.		☉'s Equa- tion.		☉'s Anom. at mean end of tithi.		Add or sub- tract ☉'s Equation.		☉'s Equa- tion.		Sum of ☉'s & ☌'s Equations.		Actual end of tithi, Lanka time.		Correction for Madras time.		Ending moment of tithi, Madras time.		Ending "College" moment, Panchangam.		Ending moment Kanjanur Panchangam.		Difference between Surya Siddh. and Naut. almanac.		Full name of tithi.		
gh.	p.	d.	gh.	p.	gh.	p.	d.	gh.	p.	gh.	p.	gh.	p.	gh.	p.	gh.	p.	gh.	p.	gh.	p.	gh.	p.	gh.	p.	gh.	p.	
10,57	84,58	-0,50	28,17	5 27,17	-22,48	-23,48	7 46,13	+1,31	47,44	7 47,7	52,33	53,11	-1,7															
1	8	10,1	85,57	-1,0	-22,48	-23,48	7 46,13	+1,31	47,44	7 47,7	52,33	53,11	-1,7															
2	9	9,5	86,56	-1,12	-24,23	-25,35	8 43,30	+1,30	45,0	8 42,52	53,11	54,11	-2,37															
3	10	8,9	87,55	-1,23	-24,47	-26,10	9 41,59	+1,29	43,28	9 40,10	54,11	55,11	-3,18															
4	11	7,13	88,54	-1,34	-23,59	-25,33	10 41,40	+1,29	43,9	10 39,13	55,11	56,11	-4,07															
5	12	6,17	89,53	-1,45	-21,55	-23,40	11 42,37	+1,28	44,5	11 40,10	56,11	57,11	-5,06															
6	13	5,21	90,52	-1,56	-18,36	-20,32	12 44,49	+1,27	46,16	12 43,1	57,11	58,11	-6,05															
7	14	4,25	91,51	-2,7	-14,11	-16,18	13 48,7	+1,27	49,34	13 47,25	58,11	59,11	-7,04															
8	15	3,29	92,50	-2,17	-8,52	-11,9	14 52,20	+1,26	53,46	14 52,59	59,11	60,11	-8,03															
9	16	2,33	93,49	-2,28	-2,58	-5,26	15 57,7	+1,26	58,33	15 59,12	60,11	61,11	-9,02															
10	17	1,37	94,48	-2,39	+3,11	+0,32	16 60,0		60,0	16 60,0	61,11	62,11	-10,01															
11	18	0,41	95,47	-2,50	+9,4	+6,14	17 2,9	+1,25	3,34	17 5,22	62,11	63,11	-11,00															
12	19	59,45	96,46	-3,0	+14,22	+11,22	18 6,55	+1,24	8,19	18 10,56	63,11	64,11	-12,00															
13	20	58,49	97,45	-3,11	+18,45	+15,34	19 11,7	+1,24	12,31	19 15,24	64,11	65,11	-13,00															
14	21	57,53	98,44	-3,21	+22,1	+18,40	20 14,23	+1,23	15,46	20 18,35	65,11	66,11	-14,00															
15	22	56,57	99,43	-3,32	+24,4	+20,32	21 16,33	+1,23	17,56	21 20,10	66,11	67,11	-15,00															

168. The reader is presented in the above table with a full decursus of tithis for a whole lunar month, calculated in accordance with the *Sûrya Siddhânta*; and he is also furnished in the same table with the ending moments of the same tithis, as arrived at by two standard Panchângams current in Southern India, namely, (1) the Kanjanûr Panchângam of Annâvaiyangâr, commonly called "No. 28 Panchângam", and (2) the Nungumbaukum Panchângam by Mr. Râghavachâri and his son, commonly called "The College Panchângam." The former of these panchângams is typical of the class known as "Vâkya Panchângams".

169. A *vâkyam* (meaning in Tamil a sentence) is simply a phrase or series of phrases, employed in accordance with a very ancient "Transnumeration" table, called "Kadapayadi", closely analogous to the present writer's Transnumeration Table, published at page 37 of his "Secret of Memory". It is generally believed that the *vâkya* process is based on the *Ârya Siddhânta*, but this is by no means well established.

Only solar dates in Southern India seem to follow the *Ârya Siddhânta*, but for lunar tithis and nakshatras, that *Siddhânta*, as proved by the above, as well as by the next, table, seems to have been given up long ago, even in Southern India, in favour of the more accurate *Sûrya Siddhânta*. If the Kanjanûr Panchângam had followed the *Ârya Siddhânta*, all mean tithis, including *Amâvâsyâs*, would have occurred according to that Panchângam 3 ghaṭikas 42 palas later than by the *Sûrya Siddhânta*, whereas the above table, and more especially the next table of nakshatras, shows a much smaller difference as a rule between that panchângam and the results arrived at on strict *Sûrya Siddhânta* principles.

170. The Nungumbaukum or "College" Panchângam belongs to the class of what are called in Southern India *Drig-ganita* panchângams, *i.e.*, those in which computation is checked by observation, the observation being understood to be that carried on at a modern standard observatory, like those at Greenwich, Paris and New York.

171. Practically, all the *Drig-ganita* panchângams are based on the Greenwich Nautical Almanac, which is published some three years in advance for each year. It is not to be supposed that the moon's and sun's places given in the Nautical Almanac are those observed then and there, for they are also calculated on the best available data, which include several elements of the lunar theory, neglected in the *Siddhântas*.

N.B.--For the manner in which *Drig-ganita* tithis are computed, see Section 121 *Supra*.

172. The reader will observe that in our specimen table the difference between *Sûrya Siddhânta* tithis and what we may call Nautical Almanac tithis, does not exceed 2 ghaṭikas at new moon or 4 ghaṭikas at other times. (The extreme difference between the two systems may amount at times to as much as 17 ghaṭikas, or 7 hours.) This no doubt is a disadvantage of the *Sûrya Siddhânta* system for strictly astronomical purposes (*i.e.*, on the assumption that Hindu Astronomy *must* agree with the most accurate results of European Astronomy); but if it is remembered that a Nautical Almanac panchângam cannot be constructed unless one has in hand the Nautical Almanac of the particular year, whereas a *Siddhânta* panchângam can be constructed in a few hours' time for any year, past, present or future, without any other materials than those furnished by Tables VI, VII, VIII and IX of this work, it will be seen that a panchângam on the purely Indian system is a great convenience.

Moreover, the Indian panchāṅgam is not a thing of to-day or yesterday, but has been constructed on the lines now followed for at least 1500 years, and no person, unacquainted with the system, can hope to understand the thousands of inscriptions scattered all over India, on the proper reading of which the reconstruction of scientific Indian history largely depends.

173. *Adhika* or *Trisparsa* Tithis and *Kshaya* Tithis : A tithi which begins on one day, is current for the whole of the next day and ends in the morning of the third day is called an *Adhika* or *Trisparsa* tithi. *Trisparsa* means "touching three days." An example is furnished in the above table by *sukla navami* of the Kanjarār Panchāṅgam, and *sukla dasamī* of our own and the College Panchāṅgam. The fact that a tithi is current for the whole of a day is indicated in the panchāṅgams by entering '60 ghat' as its ending moment, *i.e.*, it does not come to an end all that day. On the other hand, a tithi which begins and ends *between* one sunrise and another is *kshaya* or in defect and is suppressed. Such a tithi is *krishna saptamī* by all three Panchāṅgams in the above table.

N.B.—If the reader wishes to apply to the Siddhānta results, the corrections necessary to bring them up to the Nautical Almanac standard, he is enabled to do so in Chapter XVII of Part I of this work, Sections 116 to 122.

CHAPTER XXI.

Use of Tables XII and XI—A.

(NAKSHATRAS.)

174. We next suppose the reader to be desirous of calculating the *nakshatras* in order for a particular lunar month. The longest interval between each mean new moon and the mean ending moment of each of the 27 nakshatras following new moon is given in Table XI-A (pp. 134, 135) in days, ghaṭikas and palas. The interval is subject to a single correction which holds good for the whole of a Solar Year. For the years A.D. 1840 to A.D. 1920 the corrections for Nakshatras are shown in the last column of Table XII "Deduct for Nakshatras". The deduction for the solar year A.D. 1910–11 is 1 day 56 ghaṭikas 18 palas. Taking, for example, Lunar Āshāḍha in this year, we find at p. 134 that the first Nakshatra for Āshāḍha from which the deduction can be made is No. 7 Punarvasu, and we proceed to determine the mean ending moment of Punarvasu Nakshatra.

	d.	gh.	p.
(Table XI-A, p. 134.) Interval for Punarvasu, No. 7 Nak. in "Āshāḍha"	2	49	41
(Table XII, p. 151.) Deduct for the year 1910–11	—1	56	18
	<hr/>		
	0	53	23
Add mean ending moment of Āshāḍha New moon. (Table XII, p.151.) July	7	10	57
	<hr/>		
Mean ending moment of No. 7 Punarvasu Nakshatra July	8	4	20

175. Starting from this point, the following Table illustrates the whole of the processes for determining the ending moment of every nakshatra in the series of 27 from 6th July to 2nd August A.D. 1910. As in the last table, a comparison is also instituted between the ending moments of nakshatras, recorded in the "No. 28" and "College" Panchāṅgams respectively, and those arrived at in the present table on the principles of Sūrya Siddhānta. The reader will note that the agreement among the different panchāṅgams is, in this particular month, closer in regard to nakshatras than in regard to tithis. However, an extreme variation of 5 ghaṭikas has to be looked for even under nakshatras between Sūrya Siddhānta and Nautical Almanac results.

Table showing mean and actual ending moment (Lanka time and Madras local time) for each Nakshatra from 6th July 1910 to 2nd August 1910.

Name of Nakshatra.	English month and day.	Mean ending moment of Nakshatra.	Moon's mean anomaly	Nakshatra equation (Tab. IX-I).	Actual ending moment of Nakshatra, Lanka time.	Correction for Madras (Tab. XIII).	Actual ending moment of Nakshatra, Madras time.	Kanjanur No. 28 Panchangam.	College Panchangam.	Surya Siddhanta compared with Nautical Almanac.
A.D. 1910	M. d. gh. p.	d. gh. p.	gh. p.	M. d. gh. p. gh. p.	M. d. gh. p. gh. p.	M d. gh. p. gh. p.	gh. p.	gh. p.	gh. p.	gh. p.
Punarvasu ...	July 8 4 20	5 12 25	- 20 35	July 7 43 45	+ 1 30	July 7 45 15	46 0	42 50	+ 2 25	
Pushya ...	July 9 5 3	6 13 8	- 22 20	July 8 42 43	+ 1 30	July 8 44 13	45 23	40 27	+ 3 46	
Aslesha ...	July 10 5 46	7 13 51	- 22 59	July 9 42 47	+ 1 29	July 9 44 16	45 54	39 36	+ 4 40	
Magha ...	July 11 6 29	8 14 34	- 22 23	July 10 44 6	+ 1 29	July 10 45 35	47 38	40 28	+ 5 7	
Purva Phalguni ...	July 12 7 12	9 15 17	- 20 35	July 11 46 37	+ 1 28	July 11 48 5	50 36	43 13	+ 4 52	
Uttara Phalguni ..	July 13 7 55	10 16 0	- 17 33	July 12 50 22	+ 1 28	July 12 51 50	54 47	47 47	+ 4 3	
Hasta ...	July 14 8 28	11 16 43	- 13 25	July 13 55 3	+ 1 27	July 13 56 30	52 57	53 48	+ 2 42	
Chitra ...	July 15 9 11	12 17 26	- 8 22	July 15 0 49	+ 1 26	July*15 2 15	5 56	0 56	+ 1 19	
Svati ...	July 16 9 54	13 18 9	- 2 45	July 16 7 9	+ 1 25	July 16 8 34	12 16	8 33	+ 0 1	
Visakha ...	July 17 10 37	14 18 52	+ 3 5	July 17 13 42	+ 1 25	July 17 15 7	18 40	16 9	- 1 2	
Anuradha ...	July 18 11 20	15 19 35	+ 8 42	July 18 20 2	+ 1 24	July 18 21 26	24 41	23 1	- 1 35	
Jyeshtha ...	July 19 12 3	16 20 18	+ 13 42	July 19 25 45	+ 1 23	July 19 27 8	30 3	28 53	- 1 45	
Mula ...	July 20 12 46	17 21 1	+ 17 47	July 20 30 33	+ 1 23	July 20 31 56	34 26	33 15	- 1 19	
Purva Ashada ...	July 21 13 29	18 21 44	+ 20 45	July 21 34 14	+ 1 22	July 21 35 36	37 17	36 11	- 0 35	
Uttara Ashada ...	July 22 14 12	19 22 27	+ 22 29	July 22 36 41	+ 1 21	July 22 38 2	39 43	37 42	+ 0 20	
Shravana ...	July 23 14 55	20 23 10	+ 22 58	July 23 37 53	+ 1 21	July 23 39 14	40 29	37 59	+ 1 15	
Shravishta ...	July 24 15 38	21 23 53	+ 22 15	July 24 37 53	+ 1 20	July 24 39 13	40 5	37 13	+ 2 0	
Satabhisaj ...	July 25 16 21	22 24 36	+ 20 26	July 25 36 47	+ 1 20	July 25 38 7	38 47	35 38	+ 2 29	
Purva Bhadrapada ...	July 26 17 4	23 25 19	+ 17 39	July 26 34 43	+ 1 20	July 26 36 3	36 15	33 25	+ 2 38	
Uttara Bhadrapada ...	July 27 17 47	24 26 2	+ 14 5	July 27 31 52	+ 1 19	July 27 33 11	33 16	30 44	+ 2 27	
Revati ...	July 28 18 30	25 26 45	+ 9 54	July 28 28 24	+ 1 19	July 28 29 43	29 34	27 45	+ 1 58	
Asvini ...	July 29 19 13	26 27 28	+ 5 14	July 29 24 27	+ 1 19	July 29 25 46	25 35	24 27	+ 1 19	
Bharani ...	July 30 19 56	27 28 11	+ 0 25	July 30 20 21	+ 1 18	July 30 21 39	21 32	21 0	+ 0 39	
Krittika ...	July 31 20 39	0 45 37	- 3 40	July 31 16 59	+ 1 18	July 31 18 17	17 30	17 29	+ 0 48	
Rohini ...	Aug. 1 21 22	1 56 20	- 9 9	Aug. 1 12 13	+ 1 18	Aug. 1 13 31	13 43	13 55	- 0 24	
Mrigasira ...	Aug. 2 22 5	2 57 3	- 13 24	Aug. 2 8 41	+ 1 17	Aug. 2 9 58	10 20	10 27	- 0 29	
Ardra ...	Aug. 3 22 48	3 57 46	- 17 8	Aug. 3 5 40	+ 1 17	Aug. 3 6 57	7 36	7 19	- 0 22	

CHAPTER XXII.

USE OF TABLE X.

176. Table X, which covers more than a hundred and thirty pages of the present work is intended to serve the epigraphist and the historian in somewhat the same manner as Table XII is intended to serve the general reader. If Table X is used in conjunction with the Eye-Table, nothing else is needed for the determination of the ending moments of tithis, correct to two places of decimals of a day, for any of the 2000 years between B.C. 1 and A.D. 2000. The manner of using Table X will be obvious to the reader who knows how to use Table XII.

* *Chitra* Nakshatra extends from 56 gh. 30 p. on 13th July 1910 to 2 gh. 15 p. on 15th July 1910. No Nakshatra comes to an end on 14th July 1910, and this fact is indicated in the panchangas by entering *Chitra* as adhika Nakshatra and showing it against July 14, 60 gh. no palas as well as against July 15th, 2 gh. 15 p. The first entry means simply that on 14th July 1910, *Chitra* was current for the whole of the civil day.

177. Suppose for example that the date corresponding to "*Saka Samvat 999, Phālguna Sukla 3*", is to be ascertained, we proceed as follows —

		Days of S. Year.		☾'s Anom.		
					Saka 999 expired	
This is how the two head-lines of Table X should be used for ascertaining ☉'s and ☾'s anomalies.	First New Moon in Solar Year	...	3.28	2.67		
	Add collective days up to Phālguna New Moon, and remember there was an adhika month earlier in the year.		...	...	324.84	21.74
	Collective duration of 3 tithis (by Eye-Table)	...	...	2.95	2.95	
			331.07	27.36	+ .165 (☉'s Eqn.) = 27.53	
	Sun's Eqn. (by Eye-Table) for	331.07 days =			+ .165 day	
		Moon's do. do. for	27.53 days =			+ .002 day
Sum of ☉'s and ☾'s Equations.				+ .167 day		
(Table X)	Phālguna New Moon, Saka 999, A.D. 1078	(4) Feb.	14.78	} Mean tithi.		
(Eye-Table)	Duration of 3 tithis	(2)	2.95			
Add mean tithi to sum of ☉'s and ☾'s Eqn.		(7)* Feb. 17.90				

The ending moment of the tithi is therefore .90 of a day, *i.e.*, (according to Eye-Table 54 ghat. on Saturday, 17 February A.D. 1078 ; which, so far as ghatikas are concerned, is the result arrived at by Dr. Fleet by applying Prof. Chhatre's table—*Ind. Antiq.*, Vol. XVII, p. 162.

178. In the above process the *mean ending moment* of the tithi is given in the *two* lines bracketed "**Mean tithi**", and *all the rest* of the process is directed to ascertaining the sum of the sun's and moon's equations of the centre.

179. A further simplification could have been effected by using Table VIII for ascertaining the sun's and moon's anomaly, thus :—

		☉'s An.	☾'s An.
		days.	days.
(Table X)	Śaka 999 expired. Anomaly of sun and moon at first new moon in Solar Year	...	...
		3.28	2.67
(Table VIII)	Phālguna śukla 3, increased by 1 month (see Sec. 220 <i>infra</i>) because of an adhika month in the year : <i>i.e.</i> , Chaitra śukla 3.	327.79	24.69
		331.07	27.36
		☉'s Eqn.	+ .165
		27.53	

We thus obtain the sun's and moon's anomalies by the addition of *two*, instead of *three*, set of figures, and we may proceed as before to determine the equations for these anomalies.

Solar Dates by Table X.

180. Supposing the Kumbha Sankrānti for the same Śaka Samvat 999, expired, was wanted : we proceed as follows :—

Commencement of solar year, Śaka 999 : Mr. 23.6638
Kumbha Sankrānti (by Eye-Table) 305.0850

Mr. 328.7488, *i.e.*, 44 ghat. 56 p. (Tab. XIX.)

* Since the sum of the several fractions of a day which go to make up the ending moment of the tithi exceeds unity, we increase the week-day by 1.

Now, by Table VIII (see Sec. **216** *infra*) 328 days from Mr. 1, A.D. 1077 is **22 Ja. 1078**.

By Table IV (see Sec. **231** to **241** *infra*) the week day of 22 Ja. 1078 was $3 + 6 + 6 + 22 = 37$, which divided by 7 leaves remainder 2, *i.e.*, **Monday**. This result agrees with that arrived at by Dr. Fleet *loc. cit.* except as regards the moment of Sankrānti, which he puts down as about 47 ghat. 52 palas.

181. To take another example, suppose we want the third Panguni of the Viśvāvasu year which was current in or after the Śaka year 1347 (expired.)

By Table X, Śaka 1347 (exp.) was A.D. 1425.

By Table I, the Viśvāvasu of that epoch was A.D. 1425.

By Table X, the commencement of Śaka 1347 (exp.) was Mr. 26·7111

By the Eye-Table, the addition for the commencement of Panguni = 334·9053

361·6164 days.

By Table VIII, 361 days from 1 Mr. A.D. 1425 was 24th Feb. A.D. 1426.

Now, since 6164 of a day exceeds 5, that is, goes beyond sunset, therefore, by the rule in force in South India, [*vide* Sec. **144** (3)] the first Panguni in the year in question was 25th Feb. 1426.

Therefore the 3rd Panguni (Śaka 1347, Viśvāvasu) was 27th Feb. 1426.

And by Table IV the week day of 27th Feb. 1426 was $6 + 4 + 2 + 27 = 39$, which, divided by 7, leaves remainder 4 (*i.e.*) **Wednesday**. This agrees with the result arrived at by Professor Kielhorn at page 83 of Appendix to Vol. VII, *Epigraphia Indica*.

Nakshatras concurrent with Tithis.

182. A tithi is often cited along with a Nakshatra ending on the same day. In such cases the *ending moment* of the Nakshatra can be most easily determined by Table XI. (For merely finding the *concurrent* Nakshatra, we may proceed much more expeditiously as in Section **185** or Section **186**.)

Thus in the case dealt with in sections **177** to **179**, the Nakshatra correction for Śaka 999 (A.D. 1077) was (Tab. XI) that corresponding to argument 3·279, *i.e.*, $2394 + 0059 = 2453$. Deducting this from the interval for Revatī in the 12th lunar month (the year 999 Śaka contained an adhika month, and therefore Phālguna was the 12th month), we have, as net interval for Revatī, $31860 \text{ minus } 2453 = 29407$. Add this to New moon, Feb. 14·78 we have Feb. 17·72. C's Anom. $2·67 + 21·74 + 2·94 = 27·35$. Eqn. for Nak. (Tab. IX-*k*) = + 016. Absolute ending moment of Nakshatra, Feb. 17·72 + 016 or Feb. 17·74, *i.e.*, 44 ghaṭikas after sunrise on 17 Feb. A.D. 1078. This agrees with Mr. Dikshit's calculation, cited by Dr. Fleet at p. 162 of *Ind. Ant.*, Vol. XVII.

183. In South Indian inscriptions a solar date, a lunar tithi and the corresponding *nakshatra* are often cited together.

The following example shows how the citation should be verified.

Ep. Indica, Suppl. to Vol. VII, p. 132. "Śaka 1106: on the day of Satabhīshaj, which was the 14th *tithi* of the first fortnight and a Wednesday, the 26th solar day of the month of Simha".

Now by Table X, Śaka 1106 commenced on March 24·3508, A.D. 1184.

By Eye-Table, Simha begins and Karkata ends 125·4755 days after commencement of solar year.

∴ Simha Sankrânti of Śaka 1106 was on 149·8263 days of the solar year.

That is, by the rule in Southern India already adverted to, the 1st day of Simha was the 150th day reckoned from 1st March 1184.

∴ the 26th day of Simha would be 150 + 25 or the 175th day from 1st March which by Table VIII, was 22 August.

In order that the 26th day might be the 14th tithi of the first fortnight, the new moon must have occurred 13 days before, *i.e.*, about 9 August.

In Table X we find Bhâdrapada new moon on Aug. 8·56 of A.D. 1184 (Wednesday).

By Eye-Table, 14 tithis = 13·78 days.

∴ the mean 14th tithi ended on August 22·34, A.D. 1184.

The day of the week was Wednesday: since the new moon was on Wednesday, the addition of 14 days or 2 whole weeks to the day of the week would still give us the same day, Wednesday.

184. If we want the actual ending moment of the 14th tithi, we proceed as follows :—

		☾'s Anom.
First new moon in solar year, A.D. 1184	19·0909	1·191 days.
By Table VIII, 14th tithi of Śukla Bhâdrapada	131·9033	21·685
	<hr/> 150·9942	<hr/> 22·876
By Tab. IX, ☉'s Eqn. for 150·99 days = —·1672		—·1672
" " ☾'s Eqn. for 22·709 days = +·3550		<hr/> 22·709
Sum = +·1878	<hr/> +·1878	
	151·1820	
Add commencement of solar year, Mr. 24·3508	<hr/> 175·5328	days from 1st Mr.
		A.D. 1184.

By Table XIX 5328 day = 31 ghaṭikas 58 palas.

The actual ending moment of Bhâdrapada śukla 14, Śaka 1106, was 31 ghat. 58 palas after mean sunrise on Wednesday, 22 Aug., A.D. 1184.

185. For the Nakshatra corresponding to this tithi we proceed as follows :—

	Lunation space.
By Table VIII (last column) Sun's longitude for Nak. on 151st day = 12·0321	
" V (last column) do. do. 18 day = 0·0145	
Add 14 tithis (by Table II)	13·7809
	<hr/> 25·8275
By Table III, the lunation space last arrived at, 25·8275	
corresponds to No. 24 Satabhishaj whose ending space is	26·2494

Our inscription is therefore correct in all respects.

186. An equally simple method of ascertaining the Nakshatra concurrent with the above tithi is the following, where, however, we use degrees of sun's and moon's longitude.

Ending moment of tithi in days of solar year was $150.99 + .19$ (Sum of eqns.) = 151.18 days.

By Tab. XVII-A & XVII-C., ☉'s Long. and Eqn. for 151.18 days = $146.69^\circ - 2.04^\circ + .18 = 144.83^\circ$

Add Moon's Elongation, *i.e.*, No. of tithi $\times 12^\circ = 14 \times 12^\circ = 168.00^\circ$

312.83°

By Eye-Table the longitude is that of Nakshatra *Satabhishaj*.

CHAPTER XXIII.

THEORY OF ANOMALIES AND EQUATIONS OF THE CENTRE.

CONSTRUCTION OF TABLE IX.

187. The uses of Table IX, to which we come after discussing Tables XI and X, will be sufficiently obvious from examples already worked out. We therefore give in this place in popular language a theory of anomalies and their equations.

188. From the fact that the orbit of the moon as well as that of the earth is elliptical, not circular, it follows that the motions of these bodies cannot be uniform from day to day or from hour to hour. This irregularity is called the *eccentricity* of the orbit and the correction to be applied on this account is called the equation of the centre.

189. The following extract from Prof. Jacobi's Table in Vol. I of *Epigraphia Indica* will serve to introduce the reader to the general theory of Solar and Lunar anomalies, and it will also show how the material furnished by the Siddhāntas has been worked into Table IX of the present work :—

Surya Siddhanta.

☉'s Eqn. +; ☽'s Eqn. -		☾'s Eqn. -; ☽'s Eqn. +		Moon's Equation of the centre.			Sun's Eqn. of the centre.		
Deg.	Min.	Deg.	Min.	Deg.	Min.	Sec.	Deg.	Min.	Sec.
0	0	180	0	180	0	360	0	0	0
30	0	150	0	210	0	330	0	1	6
60	0	120	0	240	0	300	0	1	53
90	0	90	0	270	0	270	0	2	10

190. Let us try to interpret in detail the meaning of this table. We are supposed to measure the moon's rate of progress, beginning from perigee, the point when she is nearest the earth, and at every step we must distinguish the moon's mean position, *i.e.*, the position which she would have attained at a uniform rate of motion equal to the mean, and the actual position which she attains on account of the eccentricity of her orbit.

191. The mean and actual positions are the same at 0° or 360° , *i.e.*, at perigee and at 180° , *i.e.*, at apogee.

When the moon's mean position is 30° from perigee, her actual position has advanced by 2 degrees 32 minutes.

When her mean position ought to be 60° , we find her actually at $64^\circ 22' 30''$ from perigee.

When her mean position ought to be 90° , that is half way between perigee and apogee, she is actually $95^\circ 2' 46''$ from perigee.

From this point she begins to move more slowly, though her actual position is still in advance of the mean.

At 120° from perigee, she is $4^\circ 22'$ in advance of the mean position, that is, exactly as she was at mean 60° .

At 150° from perigee she is only $2^\circ 32'$ in advance of the mean position.

From 180° onwards she begins to slow down, and when she ought to be 210° from perigee, or 30° from apogee, we find she has reached only 210° *minus* $2^\circ 32'$ or $207^\circ 28'$. When she ought to be 270° from perigee, she is only 270° *minus* $5^\circ 2' 46''$ or $264^\circ 57' 14''$.

From 270° onwards she begins to move quicker, though she is still behind her mean position. At 300° she is behind by $4^\circ 22' 30''$ and at 330° she is behind her mean position by only $2^\circ 32'$ and at 360° or at perigee she is even with her mean position.

192. In like manner we might trace the Sun's mean and actual positions from perigee through apogee back to perigee, using the figures in the last column of the above table, from which we see that the maximum equation of the centre for the sun is $2^\circ 10' 31''$.

193. In our tables (except under Planets' Tables XVII, XVIII) we do not refer to the sun's or moon's position by degrees, but by days, which is more readily intelligible and handier for purposes of calculation.

194. Our Table IX with its numerous divisions (a) to (l) is simply the result of a careful expansion of the smaller tables from which the figures in Section **196** have been extracted, and we shall see presently how far our Table IX agrees with the original.

We saw that when the moon is actually $32^\circ 32'$ from perigee, she is $2^\circ 32'$ in advance of her mean position.

We turn the first of these figures into days with the help of Subsidiary Table VII (a) and for turning $2^\circ 32'$ into days we use Subsidiary Table VI (a).

$$\begin{array}{rcl} \text{By Sub. Table VII (a)} & 30^\circ & = 2.2962 \text{ days,} \\ & 2^\circ & = .1531 \text{ day.} \\ & 32' & = .0408 \text{ day.} \end{array}$$

$$32^\circ 32' = 2.4901 \text{ days.}$$

$$\begin{array}{rcl} \text{By Sub. Table VI (a)} & 2^\circ & = .1641 \text{ day.} \\ & 32' & = .0437 \text{ day.} \end{array}$$

$$2^\circ 32' = .2078 \text{ day.} \quad \dots \quad (1)$$

195. We now turn to Table IX (a), and look up the equation for an anomaly of 2·4901 days. We there find,

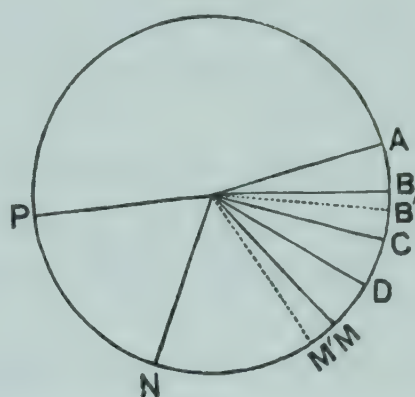
's Anomaly.	Equation.
2·479 days	·207 day.
2·493 days	·208 day.
<hr/>	<hr/>
·014 day	·001 day.

$$(\cdot490 \text{ minus } \cdot479 =) \cdot011 \text{ day} ; \frac{\cdot011}{\cdot014} \times \cdot001 = \cdot008 \text{ day.}$$

\therefore The equation for 2·490 days = ·2078 day. (2)

Our result (2) according to Table IX (a) is in exact agreement with result (1) deduced from the Siddhanta Table, which shows the anomaly and the equation of the centre in degrees minutes and seconds.

196. The reader will naturally ask why we turned the *anomaly* $32^\circ 32'$ into days by means of Table VII (a) and the *equation* $2^\circ 32'$ by means of Table VI (a). We proceed to explain.



197. Let us suppose the sun and the moon to move in the same plane and in circular orbits, describing equal spaces in equal times. Let AB, BC, CD be the mean spaces described by the sun in three successive tithis, and let AM, MN, NP be the corresponding mean spaces described by the moon in the same tithis.

198. If there were no irregularity or eccentricity in the sun's and moon's motions, the first tithi would be the time taken by the moon to gain 12° , that is, the space BM over the sun; similarly the second and third tithis would be the periods in which the moon gains (MN minus BC) and (NP minus CD) over the sun.

199. But owing to the eccentricity of their orbits we will suppose the sun to be at B' (actual position) when he ought to be at B (mean position) and the moon to be at M' (actual position) when she ought to be at M (mean position).

200. Then in the period of a mean tithi ($\cdot9343$ day) the moon gains over the sun the space B'M' but our tithi is the period during which the moon actually gains over the sun 12° , i.e., we must cut off from B'M' a space equal to BM and determine the time during which that space is gained by the moon. Our problem would be solved if we knew the time during which B'M' minus BM was gained by the moon.

201. Now $B'M' \text{ minus } BM = MM' \text{ minus } BB'$. The time during which $MM' - BB'$ is gained, is evidently the time during which MM' is gained *minus* the time during which BB' is gained. The times during which MM' and BB' are respectively gained are obtained by turning MM' and BB' into days according to Sub. Table VI (a). This is the reason why in the Tables for the moon's and also the sun's equation of the centre we turn the equation into days invariably by Table VI (a). For Nakshatra and Yoga equations other scales which it was unnecessary to give in detail, were used for converting degrees into days.

202. As the equation for the sun as well as the equation for the moon is sometimes positive and sometimes negative, and for *tithis* we have to take the *difference* between the two equations, some confusion would result from our having to change signs so often. Therefore the sun's equations are tabulated, as in the extract given above, with the signs *reversed*. That is why the sun's eccentricity, starting from perigee, is shown in the table in Sec. 189 as negative whereas it is really positive.

203. The reader will also observe that the moon's equation in the above table is, as it should be, positive between perigee and apogee, whereas in Table IX (a) it is negative for the same period. The reason is that when the moon does in a given time *more* than the mean space, this is equivalent to a given space being done in *less* than mean time. This is why in Table IX, which derives equations of time from equations of space, the signs of space-equations are reversed. In the case of the sun's equations, a double reversion of signs takes place, first a reversion in order to make the operation of combining the sun's and moon's equations always an addition, and secondly a reversion in order to derive equations of time from equations of space. As a final result, the sun's equation of time is shown in Table IX (c) as positive after perigee and negative after apogee. A third reversion takes place in calculating sunrise, where we have to derive equations of space from equations of time. (*Vide* Sec. 255 *infra*.)

204. In calculating *tithis*, all we have to do, is to sum up the equations of the sun and the moon according to Table IX, whether they are positive or negative. Before taking the moon's equation, however, we in practice add to or deduct from the moon's anomaly the sun's equation and we determine the equations for the net moon's anomaly. The reason is that when the effect of the Sun's anomaly is to diminish or increase the mean time that would be necessary for a *tithi*, it is necessary to take the moon's anomalies for the altered mean time.

205. Conversely, in calculating *Yogas*, where we have to take sum of the proper anomalistic equations of the sun and the moon, our Yoga equations in Table IX (i) [p. 20 (a),] have had to be suitably altered as to their signs.

206. For *Nakshatras*, we have to convert the moon's eccentricity, in other words her equation of the centre, into days at the rate of the moon's sidereal motion, *i.e.*, 360° for 27.32166 days and this has accordingly been done in Table IX (j), (k), and (l).

207. The sun's anomaly in Tables IX (c), (f) and (h) is expressed, not in days of the *anomalistic* year, but as days of the *solar* year, and this is done for convenience of use, as explained in Part III, Sec. 253.

208. For instance, in the above table, the sun's equation for an anomaly of 270° is entered as $2^\circ 10' 31''$.

Now by Table VII (*b*) $270^\circ = 202.92 + 71.02 = 273.94$ days.

And by Table VI (*a*) $2^\circ = .1641$ day.

$10' = .0137$ day.

$31'' = .0007$ day.

$2^\circ 10' 31'' = .1785$ day.

Since the solar year always begins with a mean anomaly of 102.0802 days, an anomaly of 273.94 days of the anomalistic year really belongs to 273.94 *minus* 102.08, *i.e.*, the 171.86th day of the solar year.

Accordingly we find in Table IX (*c*) the equation .1785 day set down against the 171.86th day of the solar year.

209. The length of the modern anomalistic year is 365.2596 days while that of the Hindu solar year is 365.2587 days. There is no practical error in adopting, as the Indian Siddhântis have done, an identical period for the anomalistic and solar (sidereal) years. The modern anomalistic lunar month is, like the Hindu anomalistic month, 27.5546 days. In converting degrees of anomaly into days we, therefore, put—

Sun's anomaly : [Sub. Table VII (*b*)] $360^\circ = 365.258756484$ days.

Moon's anomaly : [Sub. Table VII (*a*)] $360^\circ = 27.45459999$ days.

210. The above theory of anomalies and equations is subject to an important variation in practice, which we alluded to briefly in Sec. **208**, but which it is now necessary to dwell on specially. Supposing a mean tithi is accomplished at A days of the solar year, when the Moon's anomaly is B days, then, if the \odot 's equation for A days is $-a$, this means that the tithi would be accomplished (supposing for the moment that the \odot 's anomaly had no influence) in $A-a$ days of the solar year, at a moment when the moon's anomaly would be $B-a$. Now we proceed to determine the influence of this moon's anomaly $B-a$ and find the moon's equation to be, let us suppose, $-b$. We then put down, as the actual ending moment of the tithi, $A-a-b$ days of the solar year.

211. Strictly speaking, we ought to take (1) the sun's equation for $A+b+a$ days of the solar year, where b is the equation (positive or negative) of the moon for anomaly B , and a is the \odot 's equation, positive or negative, for A days of the solar year, (2) the moon's equation for anomaly of $B+a$ days, and then add the equations so found.

212. But in practice this refinement is not necessary for the sun's equation since the maximum value of $b+a$ is $(.4138 + .1784 =) .5922$ day, and the maximum variation of the sun's equation for this period is about .0018 day or 6 *palas* only. We may note, however, that in the test example, worked by Prof. Jacobi for Âshâdha Śukla 12, K.Y. 3585, and by ourselves in sections **228** and **259** to **262** *infra*, a difference of 4 *palas* does occur between his method and Mr. Dikshit's, and the learned Professor rightly surmises in a footnote (*Ep. Ind.* Vol. I, p. 430) that the difference must be due to an abridgment in the Hindu method. We now see what the abridgment consists in.

CHAPTER XXIV.

USE OF TABLE VIII.

213. Table VIII is a very comprehensive as well as a very useful table. It is designed to convey some very useful information by itself and taken with Tables VI and VII, it enables us to take the first and most important step in calculating tithis, that is, to ascertain the exact mean ending moment of a tithi in any year, past, present or future.

Let us interpret the table, taking the entries for a particular day, say the 340th day of the solar year, A.D. 1908 (Kaliyuga 5009).

214. Column 1. "Week day 4", *i.e.*, if the first day of the year was 1, the 340th day of the year would be the 4th day of the week, *i.e.*, an addition of 3; the first day of the year being 4, Wednesday, the 340th day would be $3 + 4 =$ Saturday.

215. Column 2. "Days reckoned from Jan. 1: 5, 6 Decr." and there is the following footnote: "When two dates are given in any of these columns, use the first in a leap year: otherwise use the second".

The meaning of these entries is that the 340th day of the English Calendar year, reckoned from 1 January, is 5 December if it was a leap year, otherwise it would be the 6 December. By the expression "if it was a leap year", we mean, "if in the course of reckoning we have had to pass a 29th February".

The entry in this column is meant to be of use only with reference to the English Calendar. If we want to know, for instance, how many days there are between 15 March and 23 Oct. we take the corresponding figures from col. 2 of Table VIII, *i.e.*, 74 and 296, and we know the interval to be 222 days. We should always remember that the meaning of such problems and their solution is: "From a particular hour on 15th March *to the same hour* on 23rd Oct. there are 222 whole days". (*Vide* note prefixed to Sec. 128.)

216. Column 3. The third column means: "The 3rd Feb. is the 340th day reckoned from 1 March". This column is useful for ascertaining the A.D. equivalent of dates in Indian Solar Years which began in March, *i.e.*, up to and inclusive of expired Kaliyuga 4853, A.D. 1752, see the examples in Sections 142, 180 and elsewhere, and rules in Sec. 144.

217. Column 4. The fourth column means: "The 5th March is the 340th day reckoned from 1st April, if we have passed 29th February in our reckoning: otherwise the 340th day reckoned from 1st April is the 6th March of the following year". This column is useful in ascertaining the A.D. equivalent of days in solar years, subsequent to A.D. 1752. See examples worked out in Chapters VI, VII and elsewhere.

218. Column 5. The fifth column means:—

"The 340th day of the Hindu Solar Year is, *more or less*, the 6th Panguni (Tamil), the 6th Meenam (Malabar) or the 6th Chaitra (Bengal Solar)". We say "*more or less*", because if we want to know exactly what day in the solar year corresponds to 6th Panguni, 6th Meenam, or 6th solar Chaitra, we should first of all determine the beginning of these months, according to (1) the moment of Sankrānti, and (2) the rule of practice followed in the respective provinces. See examples worked out in Sec. 181 and elsewhere.

In the present case, supposing we are concerned with the Solar Year 5011 Kaliyuga, A.D. 1910 the year began as follows:—

(Tab. VI) A.D. 1900	...	Surya Siddhanta. Ap. 12·6204
(Tab. VII) Add for 10 years.		·5876

Ap. 13·2080

Moment of Solar *Chaitra* Sankrânti }
 according to Sârya Siddhânta } 334·9053 days.
 which is followed in Bengal (by }
 Tab. VI.) } 335·1133 days of Solar year.

Arya Siddhanta.

Ap. 12·5139
 ·5868

Ap. 13·1007

Moment of *Panguni* or *Meenam* San- }
 krânti, according to Ârya Sid- } 334·9200 days.
 dhânta, which is followed in the }
 Tamil country and in Malabar } 335·0207 days of Hindu Solar year.
 (by Tab. II.) }

According to the rule followed in Malabar and the Tamil country, the month begins on the same day on which the Sankrânti occurs, if the Sankrânti occurred before ·50 of a day. [Sec. 144 (3)]. Therefore the 1st Panguni or 1st Meenam in the year, expired Kaliyuga 5011, was the 335th day of the Solar year and the 340th day would be the 6th Panguni or 6th Meenam.

In Bengal the month begins the day after Sankrânti, if the Sankrânti is before ·75 of the day. Therefore in Bengal the first Chaitra in the Solar year K.Y. 5011 (expired) will be the 336th day of the Solar year and the 340th day of the Solar year will only be the 5th Chaitra.

219. Column 6. The 6th column is the central column of the whole Table. The figure 340 in the present case is the guide in using the other columns.

220. Column 7. The 7th column should be read with the 8th. The two columns mean; "In a year where there is no *adhika mâsa*, the 1st tithi of the *dark* fortnight (indicated by *dark* figures) of Chaitra, which is called *bahula prathamî* or *badi 1*, ends on the 340th day of the Lunar Year at ·5861 of the day". If we find out the beginning of the lunar year, which we can do from Tables VI and VII, or Tab X, all we have to do is to add to it the ending moment of a tithi, as given in Table VIII, and then we know the day and fraction of day of the Solar Year or of the English Calendar year, when the mean tithi ends. Examples of this process are given throughout the work. If there has been an *adhika mâsa* during the year, which we can ascertain from Table X or XII, the tithi is advanced one month.

221. Thus, supposing we want the 3rd *bahula* tithi of Mâgha in expired K. Y. 5010 (A.D. 1909) when there was an *adhika Śrâvana*, we proceed as follows:—

Commencement of Solar year, A.D. 1909	Ap. 12·9492	(1)
First new moon in Solar year.	7·2745	(2)
18th Mâgha (for which we take from Table VIII the figures against the 18th of the next lunar month, <i>Phâlguna</i>)	...	...
	313·0242	(3)

(1) + (2) + (3), omitting 12 Ap.

321·2479 (Solar Year).

(1) + (2) + (3), including 12 Ap.

333·2479 (days reckoned from 1 Ap.)

Our mean tithi, *Māgha bahula tritīyā*, ended on the 321st day of the Solar Year at 2479 of the day or on the 333rd day of the English Calendar year, reckoned from 1st April (*i.e.*, 27 Feb. 1910) at 2479 of the day.

222. Column 8. The 8th column, as we have just seen, gives the order of tithis* in each lunar month, beginning with the bright fortnight (light figures) and ending with the dark fortnight (heavy figures).

223. Column 9. The 9th column gives the moon's anomaly at the ending moment of each tithi. The figure in this column should be added to the moon's anomaly at the moment of the first new moon in the solar year. The moon's anomaly at the first new moon in the solar year is given in the appropriate column of Table X. Tables VI and VII combined give only the moon's anomaly *at the commencement of the solar year* and if we are using Tables VI and VII to determine the moon's anomaly, we should take care to add the interval *between the commencement of the solar year and the first new moon in the solar year*. Thus, suppose we want the exact ending moment of the 12th tithi of the bright fortnight of Âshâḍha in the year A.D. 484 (K.Y. 3585 expired) and we wish to use Tables VI, VII, and VIII; we proceed as follows:—

Commencement of Solar year.		First new moon in solar year.	Moon's anomaly.
(Table VI) A.D. 400	Mr. 17.4857	23.8447 d.	21.748 d.
(Table V) <i>Add</i> for 84 years.	.7355	0.5453	13.466
	Mr. 18.2212	24.3900	35.214
<i>Add interval between commencement of solar year and first new moon in solar year</i>		..	24.390
			59.604
<i>Deduct</i> two whole anomalistic months (Table II)		...	55.109
			4.495
<i>Add</i> (from Table VIII), for ending moment of Âshâḍha <i>Sudi</i> 12 (<i>no</i> Adhika masa)		... 70.8734	15.764
		95.2634	20.259
☉'s Eqn. for 95.26 days (Table IX- <i>c</i>): —.0455 *			— .045
☾'s Eqn. for 20.214 days (Table IX- <i>b</i>): +.4138			20.214
	+ .3683	+ .3683	
<i>Add</i> commencement of solar year A.D. 484		March 18 .2212	
		March 113.8529 days	
reckoned from 1 Mr. A. D. 484, etc., as in Sec. 260 <i>infra</i> .			

224. Column 10. The tenth and last column gives the sun's sidereal longitude for Nakshatras and Yogas: that is, it gives the sun's longitude by putting 365.25875 days = 29.5306.

* If we re-calculated the ☉'s eqn. for ☉'s anom. of 95.26 + .37 (☾'s + ☉'s eqns.), we shall find it to be— 0.466 which is the ☉'s eqn. adopted by Prof. Jacobi in Vol. I, *Ep. Ind.* We have noted however in Sec. 212 *supra*, as well as in Sec. 260 *infra*, that this is a refinement seldom required in practice.

The method of using this column is explained in the chapters of the Text, headed "Nakshatras" and "Yogas" and also under "Use of the Tables", *vide* Sections 36, 49, 185, etc.

This column gives the sun's longitude for whole days: for fractions of days, when necessary, we should add the equivalent from Table V (last column). The use of this column is not necessary if we prefer to take the Sun's longitude in degrees from Tables XVII-A and XVII-C. See examples in Secs. 186, 287 and elsewhere.

CHAPTER XXV.

USE OF TABLES VII, VI AND TABLE V—LUNAR CYCLES.

225. The uses of these important tables will have become familiar from the explanation of Table VIII, contained in Sec. 223 and elsewhere. They enable us in fact to use Table VIII, whether for the Sârya Siddhânta or for the Ârya Siddhânta, and whether for Solar or for Luni-Solar dates. Instead of giving constants, as Prof. Jacobi has done, for K.Y. 3100, 3200, etc., we have given constants for K.Y. 3101, 3201, etc., being the equivalents of A.D. century years. We thereby arrive at a very simple, and at the same time handy, method of determining the A.D. month, day and fraction of day, *marking the commencement of any Hindu solar year*. We believe it is the first time that this method has been used for this particular purpose.

226. At the end of Table VII are given constants for any period of 100, any period of 200, any period of 300 years, etc., up to a period of 3000 years. These figures lead us to a knowledge of the principal lunar cycles in the Indian Calendar, that is, periods of years after which new moons happen on the same day and more or less at the same hour of the Indian solar year. Thus we find from Table VII that, according to the Sârya Siddhânta, a new moon after 19 complete S. Yrs. recurs on the same day of the S.Y. but 5 hrs. 24' earlier.

Do.	122	do.	do.	do.	do.	2	„	8' later.
Do.	385	do.	do.	do.	do.			55' „
Do.	648	do.	do.	do.	do.			17' earlier.
Do.	1315	do.	do.	do.	do.	6	„	4½' „
Do.	2329	do.	do.	do.	do.			4½' later.

N.B.—2300, and 1300 years are the two most important lunar cycles according to Dr. Grattan Guinness, but he takes for comparison the *tropical* year and the Synodical month.

227. Under moon's anomaly the most important cycle is that of 43 years, as after 43 years, the anomaly increases by only .00458 of a day, *i.e.*, 6 minutes and 3½ seconds.

228. After 46 years, mean new moons occur just 1 day 2 minutes and 3 seconds later. This is a useful fact to remember.

TABLE V.

229. The exact method of using Table V for determining the *ending moments* of Nakshatras and Yogas is not explained, because the first two-thirds of this table are hardly necessary if Table XI is used. The third portion of Tab. V "Sun's Longitude for Nakshatras and Yogas" may be used in combination with the last column of Tab. VIII for determining the nakshatra *concurrent* with a tithi. Numerous examples of this method are given in

Secs. 36, 49 and elsewhere, but our readers will probably prefer to use the alternative method provided by Tables XVII-A and XVII-C.

230. *Multiplication Table for Jupiter's Samvatsara.*—According to the *Sūrya Sidhānta*, Jupiter makes 364,220 revolutions (without *bīja* or correction) and 364,212 revolutions (with *bīja* or correction) in a yuga of 4,320,000 years. This means that the mean period of revolution of Jupiter is, with *bīja*, 4332·41581277 days, and without *bīja*, 4332·32065235 days. Each of these periods is nearly 12 years and a Jovian month or $\frac{1}{12}$ of the period of Jupiter's revolution is very nearly equal to a solar year. The Jovian month is therefore called in ordinary language a Jovian year and there are 1·0117 Jovian years in a solar year. Also a mean solar day = ·00277 of a Jovian year.

The multiplication table of Jupiter's samvatsaras is merely the multiplication of each of these quantities from 1 to 99. For further particulars regarding Jovian years, see sections 97 to 106 *supra*.

CHAPTER XXVI.

USE OF TABLE IV (VARA OR WEEK-DAY), TABLES III, II AND I.

231. The *vāra* or week-day is almost invariably quoted in Indian dates. The fact that week-days are the same in European and Indian reckoning (*e.g.*, a Monday in a date a thousand years ago corresponded, as it does to-day, to an Indian *Soma-vāra*, Tamil *Tingal*) is a striking proof of the common origin of the Indo-European mode of reckoning the week. This identity becomes all the more striking when we consider that everything else in the two reckonings (year, month, day of month, hour of day, etc.) is different. The week-day is, therefore, an important link between the two systems and it is well that we have an easy and at the same time a thoroughly accurate and reliable mode of identifying the week-day of any date, however remote, in the past. The ordinary rule laid down in Indian works on astronomical computation is to count the days from the beginning of Kaliyuga (18 Feb., 3102 B.C.) and cast off sevens—a truly formidable operation which few of our readers will venture upon.

N.B.—The number of days from the beginning of Kaliyuga up to any moment under consideration is called the *Ahargana*. This is constantly alluded to in Hindu works on astronomical computation and we have therefore given an *Ahargana* Table (Table XXII, last page of this work), but the reader will have no occasion to use it unless to verify allusions.

232. Table IV of the present work supplies an easy method of verifying the day of the week of the European Calendar. An equally simple, if not a simpler, method might be devised for discovering the week-day of any date of an Indian solar year, but inasmuch as all operations in the present work are directed towards ascertaining the A.D. or B.C. date corresponding to an Indian date, it will be enough if we are able to verify week-days, through the B.C. or A.D. equivalents of Indian dates.

233. The reader will observe in Table IV three lines in heavy type, consisting of the figures

1, 2, 3, 4, 5, 6, 7, or 0.

These are called co-efficients. Each century, year of a century and month of a year has its co-efficient which is shown in Table IV, and all we have to do is to add up the

co-efficients for the component elements of a date, the day of the month being itself an additional co-efficient. Thus if we want to know the week day of 15 July 1910 we proceed as follows :

(Table IV) co-efficient of 1900	2
„ „ of 1910	5
„ „ of July	5
Day of month	15
	—
Total	27

Dividing 27 by 7, we have as remainder 6, which is equivalent to Friday, the 6th day of the week.

The 15th July 1910 was, therefore, a **Friday**.

It will simplify the operation if we cast off sevens in the very act of summing up the figures. Thus 2 + 5 being 7, we might neglect the first two figures, and 15 being $2 \times 7 + 1$, we need only add 5 + 1 which is 6 or Friday.

234. This method is applicable to any date, A.D. or B.C., **Old Style** or **New Style**, but the student should first understand the negative character of B.C. dates and also the difference between **Old Style** and **New Style**.

235. B.C. dates. All B.C. dates are negative. B.C. 44 is really the year “*minus* 44” in relation to A.D. 1. In determining week-days of B.C. dates, we should first of all convert the dates into positive figures: that is, for the century, we should take the next previous century increased by 1, and for the odd year we should take 101 *minus* the odd year we are dealing with.

Thus, supposing we want the week-day of 18 February 3102 B.C., the first day of Kaliyuga we proceed as follows:—

(Table IV). Co-efficient of 3201 B.C. (the century preceding 3102).....	3
„ „ 101 <i>minus</i> 2 (the odd year before us) = 99.....	4
„ „ February (in an ordinary year).....	2
	Day of month 18
	—
	Total 27

Now, 27 divided by 7 leaves 6, *i.e.*, **Friday** which, according to all accounts, was the first week-day of Kaliyuga.

236. Old Style.—At present every fourth year A.D. is a leap year, but century years 1700, 1800, 1900, 2000 A.D. are leap years only if the first two figures are divisible by 4.

This rule about century years was adopted, in most European countries (except Russia which still follows the Old Style) under the authority of a decree of Pope Gregory XIII, dated 1582, and in English speaking countries, under the authority of an Act of the British

Parliament, dated 1752. It was ordered by the same Act of Parliament (in order to correct the principal error of the Old Style,) that the day following 2 September 1752 (Wednesday) should be called the "14 September 1752" (Thursday) not the "3 September" (Thursday). This is the famous "dropping of 11 days" by Act of Parliament. **Wednesday, 2 September, A.D. 1752** was therefore the last day of the Old Style in English-speaking countries and **Thursday, 14 September, A.D. 1752** is the first day of the English New Style.

For Old Style dates, *i.e.*, dates down to, and inclusive of, 2 Sep. A.D. 1752, the reader should use the co-efficients of centuries appearing under "Old Style" in Table IV.

237. The reader will note that 1600 and 1700 appear under both Old Style and New Style. The reason is that in most European countries, except the United Kingdom and Russia, the New Style came into use in 1582, whereas 1600 and 1700 were Old Style in England.

238. Coming down to the co-efficients of odd years, we note that odd years of centuries have the same co-efficient, whether the style be Old or New, A.D. or B.C : only a B.C. odd year should first be deducted from 101 so as to render it positive. (*vide* Sec. **235**.)

239. Lastly, under co-efficients of months, we notice that the co-efficient of January in a leap year is 5, while in an ordinary year it is 6 ; and likewise February has 2 for its ordinary co-efficient, and 1 for its co-efficient in leap-years. The co-efficients of the other months do not change for leap-year.

240. In ordinary years, the week-day of the 1st of January is the co-efficient of the year. Thus the co-efficient of the year A.D. 1910 is 7 or 0, and the week-day of 1st January A.D. 1910 is also 7 or 0, *i.e.*, **Sunday**. The reason is that in ordinary years, the week-day of 1st January is the co-efficient of the year *plus* 6 + 1 ; and the addition of 7, *i.e.*, of a whole week, does not of course change the week-day.

In leap-years the week-day of 1st January is the co-efficient of the year *plus* 5 + 1 ; *i.e.*, in leap-years the week-day of 1 January is 1 less than the co-efficient of the year.

241. The student who has read the author's "Secret of Memory" will be able to dispense altogether with the use of Table IV for verifying week-days. For particulars of this interesting method, see "**Secret of Memory ***" Chapter **XIV**, p. 108.

Tables III, II, and I

242. The uses of these Tables will be self-evident. Tables II and III will be constantly handled by the reader, and their principal contents have, therefore, been included in a condensed form in the Eye-Table at the end of the book.

243. The "Limits of Adhika and Kshaya months" which form the middle portion of Table II present the whole of this intricate subject in a veritable nutshell. For explanation, See Sections **18** to **30**. When mean intercalations are required, that is, when Adhika months have to be determined without reference to anomalies, we should apply the "Limits of Adhika months" just as they are.

PART III.—CONSTRUCTION OF THE TABLES.

[This part is intended to be of use in criticizing the method employed in the present work as well as in suggesting further improvements. It will be of immediate interest to those readers who are acquainted with one or other of the existing methods connected with the well-known names of JACOBI, KIELHORN, SCHRAM, SEWELL AND DIKSHIT, CHHATRE, etc., besides the older and less known names of WARREN and JERVIS. The general reader who makes his first acquaintance with the subject in the pages of this work will find the present part thoroughly intelligible and exceedingly interesting, provided he has mastered the first two Parts.]

CHAPTER XXVII.

TABLES FOR CONVERTING SPACE INTO TIME.

244. The method of calculating and verifying Indian dates, presented in this work, is intended to be of service to the general reader as well as to the scientific expert, the epigraphist, the archæologist, and the historian. The method is perfectly simple and at the same time absolutely correct according to the Siddhântas, so that it has become possible for the first time to dispense with all manner of approximations and rough and ready methods which, however valuable in the hands of an expert, are apt to mislead and confuse, more often than they assist, the general reader. The principal device by which this combination of extreme simplicity with accuracy and absolute fidelity to the original authorities, has been accomplished, is the reduction of all quantities required for calculation to whole days and fractions of a day.

245. The civil day (with its multiple, the week,) is the one measure of time that is common to European and Indian reckoning, everything else (year, month, ghaṭikas, palas, hours, minutes, seconds,) being different in the two systems. Accordingly, the civil day and decimals of a day have been adopted throughout this work for expressing all manner of Indian dates as well as for working out ending moments of *tithis*, etc., and also for verifying the correspondence of English and Indian dates. Any decimal of a day can be converted readily into Indian *ghaṭikas* and *palas* (Tamil, *naligais* and *vinâdis*) or English hours, minutes, and seconds by means of Tables XIX and XX. To assist the reader in very exact computation, the fractions expressing minutes have been carried far enough to show the recurring places. If, for instance, we wish to know how many hours, minutes, and seconds are equivalent to $\cdot 40490$ of a day, we turn to Table XX and find that $\cdot 40486$ of a day is equal to 9 hours 43 minutes. The remainder of the decimal fraction is $\cdot 00004$ which, the same table informs us, is between 3 and 5 seconds. So the answer is, 9 hours 43 minutes 4 seconds. The same decimal fraction is equivalent in Indian time (as we may see from Table XIX) to 24 ghaṭikas 18 palas. Ghaṭikas and hours, as fractions of a day, are also shown in the Eye-table at the end of the book.

246. The reader will notice that in the first three parts of the present work as well as in the connected tables (except the Subsidiary Tables VI-*a*, VII-*a*, and VII-*b*, which are intended mainly for purposes of comparison between the present tables and those of previous

writers on the same subject,) measures of time alone are used, and that measures of space, *i.e.* (*degrees* of celestial longitude, *degrees* of mean anomaly of the sun and moon, etc.) have been altogether excluded. This is the principle known as Largeteau's method, which was first applied to Indian astronomical computation by Professor Jacobi in 1888. Messrs. Sewell and Dikshit have applied the same principle in their "*Indian Calendar*" (1896).

247. The present method is founded on Largeteau's principle, but differs essentially from it as well as all previous applications of it in one important respect. Instead of using Largeteau's method to discover how much *space* has been accomplished at a particular moment of time, the present writer has used the method of day-spaces or space days to discover the *moment of time* at which a particular extent of space has been accomplished. Thus, instead of determining the expired portion of a tithi, corresponding to a given moment of time (*i.e.*, generally, to mean sunrise on a particular day,) as is done by Messrs. Jacobi and Sewell, and then calculating the unexpired portion of the tithi by means of successive approximations, the present writer investigates, directly and once for all, the *ending moment of a tithi*, the very thing required by Indian usage.

248. By setting this object steadily in view, the author has been enabled to reduce to two or three very simple and easy steps, Messrs. Sewell and Dikshit's method, which covers a page and a half (pp. 81, 82) of their "*Indian Calendar*"; likewise he has considerably abridged Professor Jacobi's process, which consists, in the first place, of an approximation, on Largeteau's method, and thirteen or fourteen *subsequent* steps (*a*) to (*m*), as expounded in Volumes I and II of "*Epigraphia Indica*". As regards Mr. Dikshit's own *very accurate* but *very tedious* method, covering *several pages* of the introduction to Dr. Fleet's "*Gupta Inscriptions*", the present writer has been successful in arriving at *absolutely the same result* as Mr. Dikshit in two lines of working. (See Sections **223**, **259**.)

249. The principles upon which space was converted into time for the purposes of the present work are set forth in the following paragraphs.

The principal measure of space, the distance of the moon from the sun, was converted into days in the ratio of 29·530587946 days to 360° in the case of the *Sūrya Siddhānta* and 29·5305925 days to 360° in the case of the *Ārya Siddhānta*. Subsidiary Table VI-A is the conversion Table for *Sūrya Siddhānta*.

The increase of the moon's age, according to the *Sūrya Siddhānta*, for each solar year is according to the above rate of conversion, 10·891701134 days. Instead of reckoning the increase of the moon's age, however, the present method reckons directly the *retardation in the date of appearance of the first new moon* in each solar year, for which purpose it is, of course, necessary to deduct 10·891701134 days from 29·530587946 days: result, 18·638886812 days. This, then, is the number of days by which the appearance of the first new moon is retarded each year, and the first thing to do every year is to calculate the interval of retardation for that year. The interval (if we take the retardation for one year) will, *ipso facto*, be the date of appearance of the first or *Vaisākha* new moon in solar year 1 of Kaliyuga (expired). From this date all other mean new moons for that or any subsequent solar year may be found by the successive addition of multiples of 29·53059 days; and the

mean ending moment of every *tithi* is given by the addition of the *tithi* equivalent in days (according to the Eye-Table) to the date of mean new moon. Precisely the same method was followed for the Ârya Siddhânta, Lalla's corrections being introduced at the appropriate date.

250. The mean anomaly, in the case of the moon as well as that of the sun, was reckoned from perigee, as in Professor Jacobi's article in the *Indian Antiquary* (1888), and not from apogee, as in his articles in Volumes I and II of *Epigraphia Indica*. For the purpose of Table IX, the moon's mean anomaly was converted into days in the ratio of 27·554599899 days to 360° in the case of the Sûrya Siddhânta, and of 27·554566986 days to 360° in the case of the Ârya Siddhânta. The increase of the moon's mean anomaly for a single solar year is thus :—

Sûrya Siddhânta, 7·048957797 days.

Ârya Siddhânta, 7·049310381 days.

The anomaly of the moon at the first moment of Kaliyuga was taken as 90° from perigee, that being the figure according to all the authorities. Subsidiary Table VII (*a*) is the conversion table for moon's anomaly according to the Sûrya Siddhânta. From the year A.D. 1600, the corrected period of the anomalistic month (27·55459797 days) has been adopted for Sûrya Siddhânta calculations.

251. The moon's mean anomaly, as entered in Table IX, corresponds to the *tithi* or space accomplished, while the equation is the addition to or deduction from the *tithi*, to be made in order to arrive at the *time* or *ending moment* of the *tithi*. Consequently, the equation in degrees was in every case added to or deducted from the mean anomaly, and the result, converted into days at the rate of 27·5546 days to 360°, is entered as the anomaly in Table IX.

252. For the purpose of Table IX-*c*, *f*, and *h*, the sun's mean anomaly, reckoned from perigee, was converted into days at the rate of 365·25875 days to 360° [Subsidiary Tab. VII (*b*)] and the sun's equation of the centre was converted at the same rate as the distance of moon from sun (29·53059 days to 360°), because the principal use of the sun's equation of the centre is to correct the mean into the true distance of the moon from the sun. The moon's equation of the centre in Table IX-*a*, *b*, *d*, *e*, *g*, was converted at the same rate, and for the same reason, from degrees into decimals of a day.

N.B.—In the Nakshatra and Yoga Equation Tables, IX-*i*, *j*, *k*, *l*, equations in degrees were converted into days at the rate of 27·32167 days for 360° in the case of Nakshatras, and of 25·4202 days for 360° in the case of Yogas.

253. The actual sun's anomaly, as entered in Table IX, is the result of a series of transformations which had to be carefully executed for each of the 680 stages of the anomaly. According to the Sûrya Siddhânta, the mean anomaly of the sun at the commencement of each solar year, neglecting the slow motion of the perigee which is allowed for in that Siddhânta but not in the others, is 102° 45' or, in solar days, 104·25093 days. This amount has therefore to be added to the number of days expired in the solar year at a given moment in order that the sun's anomaly for that moment may be correctly expressed in days. From the sum, 2·1707 days have to be deducted for Sodhya. Thus the equation entered in Table IX (*c*) against the 182nd day of the solar year is the equation which really belongs to the following mean anomaly . *viz.*, 182 days *plus* 104·25093 days *minus* 2·1707 days, that

is, an anomaly of 284.0802 days : the latter figure, which is not required in practice, has wholly disappeared from Table IX (c), and the equation is simply entered against the day of the solar year for which, in practice, it is likely to be required.

254. For *nakshatras*, the following formula was used : (moon's longitude *minus* sun's longitude) *plus* sun's longitude = moon's longitude for *nakshatras*. As moon's *minus* sun's longitude is expressed according to the ratio $360^\circ = 29.53059$ days, the sun's longitude is expressed in the same ratio. Solar days are thus expressed in terms of the synodical month and the result of the reduction, after allowing for *śodhya*, is exhibited for whole days in the last column of Table VIII, "Sun's longitude for Nakshatras". *Fractions* of solar days can be converted into lunation-longitude by means of the third multiplication table in Table V. The first two multiplication tables in Table V were originally intended to be of use in determining the ending moment of a yoga or nakshatra, but in practice, either Table XI or Tables XVII-A and XVII-C will be found much easier and handier than Table V for the investigation of all kinds of problems connected with nakshatras and yogas. Table XI is referred to in Secs. **263** to **265** *infra* and Tables XVII-A and XVII-C in Sec. **266** *infra*.

255. The moment of *sunrise* for any latitude and longitude in India can be ascertained by means of Table XIII, based on the rules and table of *asus* given by Professor Jacobi in Volume I of the *Epigraphia Indica*. Professor Jacobi has himself given detailed tables for sunrise in Volume II of the same publication, but the results achieved by means of those tables can, it is believed, be more easily arrived at by the present Table XIII. For the purpose of determining the equation of time for each day of the solar year, the sun's equation of the centre, according to Table IX (c), was used, with the sign changed : likewise the *asus* given in Professor Jacobi's table and reproduced in Sec. **76** *supra*, had to be suitably modified.

Thus (according to Professor Jacobi's table) in the 10th degree of Northern latitude 30 degrees of Sign 1 of the Zodiac take 1544 *asus* or 1544×4 seconds of time to rise ;

or in lunation-longitude,

$$\left(\frac{30}{360}\right) \times 29.53059, \text{ or } 2.46088 \text{ units of space take } 1544 \times 4 \text{ seconds of time to rise ;}$$

$$\therefore 1 \text{ unit of space takes } \frac{1544 \times 4}{2.46088} = 1544 \times 1.62 = 2510 \text{ seconds.}$$

This 2510, then, is the factor by which each day's equation of the centre according to Table IX (c) should be multiplied (so long as the sun is in the first Sign) in order to give that day's equation of time.

And generally, all the *asus* in Professor Jacobi's table were multiplied by $\frac{4}{2.46088} = 1.62$, and the factors thus obtained were multiplied again by each day's equation according to Table IX (c) in the present work : the result was each day's equation of time in seconds as entered in Table XIII of this work. The same result could of course have been arrived at directly from Table XVII-A, "Sun's Equation in degrees for each day of Solar Year".

256. For using the tables in *Epigraphia Indica*, Vol. II, the sun's longitude (first sidereal and then tropical), corresponding to a given day of the solar year, has to be first determined from special tables in Vol. I, *Epigraphia Indica* ; then the *vinādis* given under each degree of latitude and for each Sign of the Zodiac in Vol. II, *ibid.*, have to be multiplied

by the equation of the centre, which in turn has to be calculated from the sun's mean anomaly, applied with proportional parts to Special Table XXIV-B in Vol. I, *Epigraphia Indica* : only then can the moment of sunrise for a given day in the solar year be ascertained.

257. In the present Table XIII on the other hand, the moment of sunrise for any day of any solar year is obtained by simply adding a figure in the column "Tropical Longitude" to the figure opposite the given day of the solar year in the column "Equation of Time"; and the result is the correction, in seconds of time, to be applied to mean sunrise at Lankâ (6 a.m.) to determine the local sunrise for the given latitude.

258. Column 3 under each degree of latitude in Table XIII is a further step towards simplification, for it gives, for the 80 years ending 1920, the *total* correction to be applied to mean Lankâ time in order to arrive at the local time, for each of 30 important places, including Calcutta, Madras and Bombay. In this column the difference in time corresponding to the longitude of each place, measured from Ujjain, is added to the correction for sunrise for each day of the solar year and for each degree of latitude.

Example.—*Ashâdha Sukla 12, Kaliyuga 3585 (expired) A.D. 484.*

259. A single test problem, the same as that selected by Mr. Dikshit in his Introduction to *Dr. Fleet's Gupta Inscriptions* as well as by Professor Jacobi in Vol. I of *Epigraphia Indica*, will suffice to demonstrate the absolute reliability and extreme simplicity of the above processes as carried out in the present work. The problem is to determine the ending moment of *Ashâdha sukla dvâdasî* in *Kaliyuga 3585 (expired)*, A.D. 484. The ending moment has to be determined (*a*) for Lankâ and (*b*) for the latitude and longitude of Eran (Lat. 24° , Long. $78^\circ 15'$). Lastly, the problem has to be worked out, first according to the *Sûrya Siddhânta*, and then according to the *First Arya Siddhânta*.

SURYA SIDDHANTA.

References to Tables.	Days of Solar Year.	Moon's mean Anomaly in days.
(Table X): Kaliyuga 3585; A.D. 484; * March 18·2212.		
First New Moon in Solar year ...	24·3900	4·494
(Table VIII): Âshâdha śukla 12 ...	70·8734	15·764
	95·2634	20·258
Table IX (c): ☉'s Eqn. for 95·26 days of Solar Year =	−·0455	(☉'s Eqn.) −·0455
Table IX (b): ☾'s Eqn. for anom. of 20·212 days =	+·4138	20·212
	+·3683 + ·3683	
* English month, day, and fraction of day marking commencement of solar year ...	95·6317	
	* March 18·2212	
	113·8529	

Our result is : the tithi ended at ·8529 of a day, *i.e.*, at 51 ghaṭikas 11 palas on the 113th day of the English Calendar, counting from 1st March.

The reader will be pleased to note that this absolutely correct result for the ending moment of a tithi is obtained by *simply adding* up six or seven figures from Tables VIII, IX, and X, and that absolutely no other process is required for any tithi in any year.

260. Now, by Table VIII, the 113th day of the English Calendar, counting from 1st March, is 21st June ;

by Table XIX, $\cdot 8529$ of a day = 51 ghaṭikas 11 palas ;

by Table IV we arrive at the week-day as follows :—

Co-efficient of 400 A.D.	...	2
Co-efficient of odd year 84	...	0
Co-efficient of June	...	3
Day of the month	...	21
		—
		26

Since 26, divided by 7, leaves remainder 5 = THURSDAY, the final answer is THURSDAY, 21st JUNE, A.D. 484, 51 GHATIKAS 11 PALAS after mean sunrise at Lankâ.

NOTE.—This is the absolutely correct ending moment, according to Mr. Dikshit ; but Professor Jacobi arrives at a result which is 4 palas short. To arrive at the latter result, ☾'s + ☉'s Eqn. must be added as in foot-note to p. (83) to ☉'s Anom. before ascertaining ☉'s Eqn., just as ☉'s Eqn. is in the actual working *supra*, added to ☾'s anom. before ascertaining ☾'s Eqn. This extra step, however, is a nicety seldom required in practice, since the error on this account can never exceed 6 palas. See Sec. 212 *supra*.

TO DETERMINE THE ENDING MOMENT OF THE ABOVE TITHI IN TRUE LOCAL TIME AT ERAN.

261. We first of all find the sun's sidereal longitude for 95·85 days, for which purpose we deduct the *sodhya*, 2·17 days. Remainder, 94 days nearly.

We turn to Table XIII and bring down the entry under Latitude 24° corresponding to the 94th day of the Solar Year, for ☉'s trop.* long. and the entry corresponding to the 95th day for the equation of time.

(1) Equation of time (95th day) : + 148 seconds of time.

(2) ☉'s tropical longitude (94th day) : + 2647 seconds of time.

(3) To these figures from Table XIII we add the time-difference for the longitude of Eran (+ 2·53 degrees Ujjain longitude), namely, $+ 2\cdot53 \times 240$ or + 608 seconds of time. Total : $+ 148 + 2647 + 608 = + 3403$ seconds of time.

Now 3403 seconds of time, divided by 60, are 56 minutes 43 seconds or $\cdot 0393$ of a day. Adding this to the mean Lankâ time already arrived at, *viz.*, $\cdot 8529$, we obtain, as TRUE LOCAL TIME at ERAN for Âshâḍha Sukla 12, 3585 Kaliyuga, $\cdot 8922$ of a day or 53 GHATIKAS 32 PALAS which is exactly the same as Mr. Dikshit's result.

ACCORDING TO 1st ARYA SIDDHANTA.

262. The simplest way of arriving at the ending moment of the above tithi according to the first Ârya Siddhânta—and this was apparently the method adopted by Mr. Dikshit—is to deduct from the ending moment, already arrived at, the difference between the *Sodhyas* of the Sûrya and Ârya Siddhântas (2·1707 days *minus* 2·1476 days = $\cdot 0231$ day), this being the

* NOTE.—In the solar year, 3585 K.Y. we make no correction for the difference between ☉'s sidereal and tropical longitude because in 3600 K.Y., *i.e.*, only 15 years later, the ☉'s sidereal coincided with the ☉'s tropical longitude.

only difference between the Sûrya and Ârya Calendars at the epoch 3585 K.Y. We thus obtain .8530 day less .0231 day = .8299 day = 49 GHATIKAS 48 PALAS (Table XIX). This is exactly Mr. Dikshit's result for the mean Lankâ time of the ending moment of the tithi according to the 1st Ârya Siddhânta. We may make the same deduction for true local time at Eran according to the same Siddhânta, and obtain Mr. Dikshit's result for this also.

NOTE.—There was also a difference of .001 of a day, i.e., $1\frac{1}{2}$ minutes or 4 palas between the commencement of the solar year, K.Y. 3585, according to the Surya and Arya Siddhantas (*vide* Tables VI and VII in the present work); but apparently Mr. Dikshit neglected this trivial difference.

CHAPTER XXVIII.

CONSTRUCTION OF TABLE FOR NAKSHATRAS AND YOGAS.

263. Table XI contains a very easy method of calculating directly the absolute ending moment of a *nakshatra* or *yoga*.

The interval between new moon and any particular nakshatra n may be expressed by the formula $\frac{29.5306-A}{q} + n \times d$.

where A is the sun's longitude at new moon, expressed in terms of a lunation as in the last column of Table VIII, n is the numerical order of the given nakshatra, counting from Revatî, d is the mean duration of a nakshatra in days, and q is the ratio of the length of the synodical to that of the sidereal month.

The above expression may be expanded into

$$\left\{ 29.5306 - (f + al - 2.1707) \times m \right\} \times \frac{1}{q} + n \times d,$$

where f is the moment of occurrence of the first New Moon in a Solar Year, as given in Table X, a is the number of lunations completed since the commencement of the Solar Year, l is the period of a lunation in days (i.e., 29.5306 days); 2.1707 days are the *sodhya*, m is the factor for converting Sun's longitude into lunation space, according to Table V (last column); $\frac{1}{q}$ is the factor used in the 1st column of Table V (i.e., $\frac{1}{1.0808}$) and $n \times d$ is the collective duration in days of Nakshatras counted from Revatî up to the end of the given Nakshatra.

We may expand the above expression again as follows:

$$29.5306 \times \frac{1}{q} + 2.1707 \times m \times \frac{1}{q} + n \times d - f \times m \times \frac{1}{q} - al \times m \times \frac{1}{q}.$$

Now all these expressions connected by + or −, except, $f \times m \times \frac{1}{q}$ may be calculated *once for all* for every *Nakshatra* in the lunar year, for

$$29.5306 \times \frac{1}{q} = 27.32167;$$

$$2.1707 \times m \times \frac{1}{q} = .16237;$$

And the expression $(.16237 + n \times d - al \times m \times \frac{1}{q})$, when calculated for each Nakshatra becomes one of the figures given in Table XI under "Interval between New Moon and each Nakshatra".

There remains $f \times m \times \frac{1}{q}$, whose maximum value is $29.5306 \times m \times \frac{1}{q} = 2.20891$ (the difference between 29.530587946 and 27.321674163, the lengths of the synodical and sidereal months).

The values of $f \times m \times \frac{1}{q}$, less than the maximum, may be calculated by means of the Nakshatra correction Table in Table XI.

Accordingly all that we have to do, in order to know the mean ending moment of any Nakshatra, is to take the corresponding figure from the "Interval" Table XI and deduct the value of $f \times m \times \frac{1}{q}$ as obtained from the "correction" table in Table XI.

N.B.—The correction tables might have been made additive instead of subtractive, by (1) subtracting all the quantities in the correction tables from 2·20890 in the case of Nakshatras and from 4·11036 in the case of Yogas, and (2) subtracting 2·20890 and 4·11036 respectively from all the intervals in the body of Table XI. This will be attended to in a future edition of the work, should a second edition be called for.

264. Thus, supposing the mean ending moment of *Mûla* Nakshatra in the month of (lunar) *Kârttika* in A.D. 1910, is required :—

The mean ending moment of *Kârttika* New Moon is (by Table X) November 2·30

The integer and first two decimal places of the "Interval" for
" *Kârttika* Mûla " (Table XI) 6·13

Nov. 8·43

Deduct $f \times m \times \frac{1}{q}$, i.e., the equivalent of 25·91 rding to the correction
table in T XI; $1·87 + ·07 = 1·94$. —1·94

Nov. 6·49

This is the mean ending moment of the Nakshatra *Mûla* in Lunar *Kârttika*, A.D. 1910.

If we want the absolute ending moment, we calculate the anomaly :

	Days.
Moon's mean anomaly at commencement of Solar Year	... 0·535
Add increase of anomaly up to <i>Kârttika</i> New Moon	... 11·866
Add "Interval" less $f \times m \times \frac{1}{q}$	... 4·19
	16·59
Corresponding Equation for Nakshatras (Table IX- <i>k</i>)	... +·246

Adding this equation to the mean ending moment, Nov. 6·49, we have Nov. 6·74 or (by the Eye-Table) $44\frac{1}{2}$ ghatikas after mean sunrise on Nov. 6, A.D. 1910. We could, of course, if we had liked, have calculated the absolute ending moment to four places of decimals instead of to two.

265. *Yogas* are worked in the same manner, by using the corresponding portions of Table XI, i.e., by deducting from the "Yoga Interval" (for the given lunar month and given Yoga) the correction for the Solar Year according to the Yoga correction table in Table XI.

266. When a *Yoga* and *Nakshatra* are cited with the *tithi* as in the example in Sec. 98 *supra*, it will generally be enough to ascertain the nakshatra and the yoga which were concurrent with the *tithi* and this can most easily be done as follows :—

Sun's anomaly at ending moment of *tithi*, 203·31 days.

By Table XVII-A, the ☉'s longitude corresponding to 203 days is 197·94°
" XVII-C, " " " 31 day is 31°

198·25°

The *tithi* being the 9th, the moon's elongation was $9 \times 12^\circ = 108·00^\circ$

Total 306·25°

This (by Eye-Table) is the longitude for Nakshatra *Dhanishtha*.

For *Yoga* we add $2 \times$ Sun's Longitude to Moon's Elongation.

That is, the yoga longitude is $108^{\circ}00' + 2 \times 198^{\circ}25' = 108^{\circ}00' + 396^{\circ}50' = 504^{\circ}50'$

Deducting 360° which is one complete revolution, we have $504^{\circ}50' - 360^{\circ} = 144^{\circ}50'$, which (by Eye-Table) is the Longitude of No. 10 *Ganda Yoga*.

267. When we wish to find the ending moment of a Nakshatra or Yoga, we should apply Table XI as follows:—

In our example, the mean tithi ended at 8.86 days after *Kârttika New Moon*. The age of the first new moon in the solar year being 20.27 days, the corresponding Nakshatra correction is (by Table XI) $1.50 + .02 = 1.52 =$ (by Eye-Table) 1 day 31 ghaṭikas and the Yoga correction (by Table XI) $2.78 + .04 = 2.82 = 2$ days 49 ghaṭikas.

From Table XI-A under col. VII *Kârttika* we obtain—

Nakshatra.				Yoga.			} N.B.—The coincidence of a particular <i>Yoga</i> with a particular <i>Nakshatra</i> happens only once a year, and we could, by means of this coincidence, discover the month and the tithi even if these were not quoted.
d.	gh.	p.		d.	gh.	p.	
No. 23 Dhanishṭha	10	10	59	No. 11 Vriddhi	11	24	59
<i>Deduct</i> correction	1	31			2	49	
<hr/>				<hr/>			
	8	40			8	36	

This is the Tithi interval, 8 d. $51\frac{1}{2}$ gh.— $11\frac{1}{2}$ gh. This is the Tithi interval 8 d. $51\frac{1}{2}$ gh.— $15\frac{1}{2}$ gh.

We can, with the last line of corrections, use for the Nakshatra and Yoga the ☉'s and ☾'s Anomalies already found (Sec. 98) for the tithi, i.e., ☉'s Anom. 206 days $18\frac{1}{2}$ gh.; ☾'s Anom. 25 days 16 gh.

Our Nakshatra Eqn. will be that for ☾'s Anom. of 25 d. 16 gh. less $11\frac{1}{2}$ gh., or for 25 d. $4\frac{1}{2}$ gh.: Eqn. (Tab. IX-*l*) is $+ 11\frac{1}{2}$ gh.

Our Yoga ☉'s Anom. will be 206 d. $18\frac{1}{2}$ gh. less $15\frac{1}{2}$ gh. or 206 d. 3 gh., for which ☉'s Yoga Eqn. (Tab. IX-*i*) is $+ 7$ gh. 42 p.

Our Yoga ☾'s Anom. will be 25 d. 16 gh.— $15\frac{1}{2}$ gh. = 25 d. $\frac{1}{2}$ gh. for which ☾'s Yoga Eqn. (Tab. IX-*i*) is $+ 10$ gh. 55 p.

The sum of ☉'s and ☾'s Eqns. for Yoga is $+ 7$ gh. 42 p. $+ 10$ gh. 55 p. = $+ 18$ gh. 37 p.

These equations can be added to the mean ending moments of Nakshatra and Yoga.

The equation being added to Nakshatra mean ending moment, we have, as the absolute ending moment of the Nakshatra, Oct. 19.76, i.e., $42\frac{1}{2}$ gh.— $11\frac{1}{2}$ gh. $+ 11\frac{1}{2}$ gh. = $42\frac{1}{2}$ gh. on 19 Oct. A.D. 1474.

The Yoga ended at $42\frac{1}{2}$ gh. — $15\frac{1}{2}$ gh. $+ 18\frac{1}{2}$ gh. = $45\frac{1}{2}$ gh., when tithi also ended (*vide* Sec. 98).

Now Dhanishṭha Nakshatra ends when moon's longitude is $306^{\circ}7'$ (Eye-Table) and since the moon is said to have been in Kumbha rāṣi, her longitude must have been between 300° and 330° (Eye-Table).

Since the event happened between 300 and 306.7 degrees of moon's longitude, the exact hour is defined as being less than 30 ghaṭikas before the end of the Nakshatra (since by Table XVII-D the moon's long. increases by 6.7° in .50 of a day).

N.B.—With reference to line 5 of Sec. 98, the Tithi being the 18th, the *karana* (*vide* list in Table III) must have been *Kaulava* and must have ended at the same moment as the 9th tithi (for the reason explained in Sec. 55 *supra*).

CHAPTER XXIX.

INVESTIGATION OF ADHIKA AND KSHAYA MONTHS.

268. *Adhika* months are the cream of the Indian Calendar, while *kshaya* months are its *crème de la crème*. Figures of speech apart, it is certainly true that the success or failure of any computer in deducing *adhika* and *kshaya* months is the measure of his success or failure in dealing, as a whole, with the Indian Calendar. How far the present method satisfies this ordeal, will be for competent judges to decide.

269. Two independent English lists of *adhika* and *kshaya* months are at present in existence, the first by Prof. **Chhatre** (reproduced in *Ind. Antiq.*, Vol. XXIII, pp. 105–108), and the second by Messrs. **Sewell** and **Dikshit**. The lists in **Patell's Chronology** and **Cunningham's Indian Eras** are obviously copied, without check, from Chhatre whose reputation was and is, sufficient to justify such a procedure.

Messrs. Sewell and Dikshit certainly exercised an independent and erudite judgment in revising Prof. Chhatre's list, and they declare, in several parts of their work, the indubitable superiority of their list to that of *Chhatre*.

270. For the purposes of Table X in the present work, it was necessary to weigh carefully the merits of Mr. Chhatre's and Mr. Dikshit's calculations wherever they differed. The palm must no doubt be awarded, as a general rule, to Mr. Dikshit, but he seems to have failed, by oversight, to take notice of the *kshaya* months in A.D. 507 and A.D. 751 which are investigated below.

Adhika Months.**A.D. 629.**

271. In regard to this year Messrs. Sewell and Dikshit are at some pains to explain (under *Additions and Corrections*, p. 150 of "Indian Calendar") that Chhatre's entry of Adhika Kârttika is wrong and that their own entry of Adhika Âśvina is correct. Let us verify this statement, and in so doing, note the comparative brevity and simplicity of our method.

	Days.	☉'s and ☾'s Eqns.	☾'s Anom.
First New moon in Solar Year A.D. 629,	10·2145		20·456
Add for 7th New moon	177·1835	—·172	11·856
	<hr/>	—·342	<hr/>
	187·3980	<hr/>	32·312
	—·514	—·514	—·172 ☉'s Eqn.
	<hr/>		<hr/>
7th or Tulâ Sankrânti 186·9355:	186·884		32·140
			27·555
			<hr/>
			4·585

The 7th new moon was therefore *Asvina*, and obviously the 6th new moon also was an *Asvina*; so that the Adhika month was, as stated by Messrs. Sewell and Dikshit, Âśvina, not as stated by Chhatre, Kârttika.

A.D. 979.

272. In each of the next two cases Mr. Chhatre was out of reckoning by a very small margin. For A.D. 979 Messrs. Sewell and Dikshit have given *Srāvana* as the Adhika month, whereas *Bhādrapada* is the Adhika month in that year according to Prof. Chhatre's list. The calculations must in all these cases be made by the *Sūrya Siddhānta* and the foot-note to p. (9) of the text should be applied.

	Days.	☾'s Anomaly.
First New moon in Solar Year A.D. 979,	7·5649	5·023
Add for 5th New moon	118·1223	7·904
	<hr/> 125·6872	<hr/> 12·927
Sum of ☉'s and ☾'s Eqns. : $-\cdot1259 - \cdot1005 = -\cdot2264$		<hr/> -·126 (☉'s Eqn.)
5th or Simha Sankrānti 125·4755 :	125·4608	12·801

The Adhika month was *Srāvana* by ·0147 day, *i.e.*, nearly one ghaṭika, and in this instance Messrs. Sewell and Dikshit are right. Our Table X shows Adhika *Srāvana*.

A.D. 1199.

	Days.	☾'s Anom.
First New moon in Solar Year	3·3683	8·539
3rd New moon in „	59·0612	3·952
	<hr/> 62·4295	<hr/> 12·491
		+·055 (☉'s Eqn.)
		<hr/> 12·546

Sum of ☉'s + ☾'s Eqns. + ·0555 - ·1261 = -·0706 -·0706

3rd or Mithuna Sankrānti 62·3555 : 62·3589

The Adhika month, 3rd new moon, was *Ashādhā*, as stated by Messrs. Sewell and Dikshit, not *Jyeshtha*, as determined by Chhatre. Our Table X shows Adhika *Āshādhā*.

It happens that this very interesting Adhika month, the 3rd lunar month in the year AD. 1199—1200 is quoted in a South Indian inscription, discussed by Dr. Fleet at p. 156 of the *Indian Antiquary*, Vol. XIX (1890). In the inscription itself the Adhika month is identified as *Ashādhā*, not as *Jyeshtha*. Of course the margin of difference is so small (5 minutes), that a calculator might, without being convicted of error, place an *adhika* month of this description on either side of the Sankrānti. If we did not know that the difference was so small, we should be at a loss to account for the discrepancy between the statement in the inscription and Prof. Chhatre's list. As it is, a more striking instance cannot be imagined than this actual one, to demonstrate the value and importance to an epigraphist of a knowledge of how to calculate tithis accurately.

Kshaya Months.**A.D. 507.**

	Days.	☉'s and ☾'s Eqns.	☾'s Anom.
First New moon in Solar Year	10·1256	—·129	14·587
Add for 8th New moon in Solar Year	206·7141	—·064	13·832
(1) 8th or Vrischika Sankrânti 216·8289 :	216·8397	—·193 = 216·6467	28·419
			27·555
			0·864
			—·129 (☉'s eqn.)
			0·735
		+·039	0·864
Add for 10th New moon	59·0612	—·355	3·952
(2) 10th or Makara Sankrânti 275·637 :	275·9009	—·316 = 275·5849	4·816
			+·039 (☉'s eqn.)
			4·855
		+·120	4·816
Add for 11th New moon	29·5306	—·412	1·976
(3) 11th or Kumbha Sankrânti 305·085 :	305·4315	—·292 = 305·1395	6·792
			+·120 (☉'s eqn.)
			6·908

273. From (1) it follows that the 8th new moon was Kârttika and it is apparent from the time of occurrence of that new moon (1 ghaṭika before the end of the solar month) that the 7th new moon also must have been a *Kârttika*.

From (2) it follows that the 10th new moon was Pausha. [Foot-note to p. (9) of Text.]

From (3) it follows that the 11th new moon was Phâlguna. [Do. do.]

∴ The new moon between Pausha and Phâlguna, viz., *Mâgha*, was *kshaya* in this year.

It is also evident from the time of occurrence of this Phâlguna that the 12th new moon also must have been a Phâlguna.

Against this year Messrs. Sewell and Dikshit have noted only “Adhika Phâlguna”, whereas Chhatre mentions also a *kshaya* month, Pausha. We have just seen that the *kshaya* month was really *Mâgha*, which is accordingly noted in our Table X.

Nor would the case have been different under the Ārya Siddhânta, since, as we remarked in the foot-note to Sec. **161** *supra*, the new moons under the Ārya Siddhânta at this epoch occurred only ·0231 of a day before the Sūrya Siddhânta new moons, and this would have made no difference as regards *adhika* and *kshaya* months in the present case.

A.D. 751.

274. Only an *Adhika* Chaitra without a *kshaya* month is noted in this year by Messrs. Sewell and Dikshit, whereas Prof. Chhatre notes *Adhika* Kârttika and *Adhika* Chaitra besides *Mârgasîra kshaya*. Let us work for the different new moons:—

	Days.	☉'s and ☾'s Eqns.	☾'s Anom.
First New moon in Solar Year A.D. 751:	10·3034	—·172	26·321
Add for 7th New moon	177·1835	—·304	11·856
(1) Beginning of 7th Solar month 186·9355 :	187·4869	—·476 = 187·011	38·177 —·172 (☉'s Eqn.) = 27·55 = 10·450
			27·555
		—·128	10·622
Add for 8th New moon	29·5306	—·133	1·976
(2) Beginning of 8th Solar month 216·828 :	217·0175	—·261 = 216·756	12·598 —·128 (☉'s Eqn.) = 12·470
		—·052	
Add for 9th New moon	29·5306	+·077	1·976
(3) Beginning of 9th Solar month 246·3192 :	246·5481	+·025 = 246·573	14·574 —·052 (☉'s Eqn.) = 14·522
		+·040	
Add for 10th New moon	29·5306	+·335	1·976
(4) Beginning of 10th Solar month 275·6369 :	276·0787	+·375 = 276·454	16·550 +·040 (☉'s Eqn.) = 16·590
		+·120	
Add for 11th New moon	29·5306	+·385	1·976
	305·6093	+·505	18·526
(5) Beginning of 11th Solar month 305·0850 :	305·6093	+·505 = 306·114	18·526 +·120 (☉'s Eqn.) = 18·664
		+·169	
Add for 12th New moon	29·5306	+·412	1·976
(6) Beginning of 12th Solar month 334·9053 :	335·1399	+·581 = 335·721	20·502 +·169 (☉'s Eqn.) = 20·671
		+·176	
Add for 13th New moon	29·5306	+·357	1·976
(7) End of 12th Solar month 365·25875 :	364·6705	+·533 = 365·203	22·478 +·176 (☉'s Eqn.) = 22·654

N.B.—The above is a convenient and concise method of working for *Adhika* and *Kshaya* months.

From (1) and (2) it follows [applying the rule in foot-note to p. (9) of the Text], that the 7th and 8th new moons were both Kârttika, the first of them being *Adhika*.

From (3) it follows that the 9th new moon was *Pausha*.

∴ The new moon between Kârttika and Pausha, viz., *Mârgasîra* was *kshaya* and it is accordingly noted as such in our Table X.

From (4) it follows that the 10th new moon was *Mâgha*.

From (5) it follows that the 11th new moon was *Phálguna*.

From (6) and (7) it follows that the 12th and 13th new moons were both *Chaitra* the first of them being *adhika*.

It would appear that by oversight Messrs. Sewell and Dikshit failed to take account of these facts, notwithstanding that Prof. Chhatre had mentioned them.

A.D. 1963.

275. Messrs. Sewell and Dikshit, after noting that the last *Kshaya* month before our time was in A.D. 1822, go on to remark: "We are led to suppose that there will be no suppressed month till at earliest A.D. 1944, and possibly not till A.D. 1963".

There is no reason why the matter should be treated as one for conjecture, since anybody familiar with the present method can calculate that the next *Kshaya* month will be in A.D. 1963, as we have indeed noted in Table X. There will be another in A.D. 1982, as noted in the same Table.

CHAPTER XXX.

CONSTRUCTION OF PLANETARY TABLES XVII AND XVIII.

276. The mean sidereal periods, used in Tables XVII and XVIII, are those of modern European astronomy adjusted to the Indian sidereal year. The following table compares the sidereal period of each planet, ordinarily given in Indian astronomical works, with that adopted in this work as well as with the results of modern astronomy.

Planet.	Indian Sidereal period.	Modern Astronomy (Encycl. Brit.)	Figure adopted in this work.
	Days.	Days.	Days.
Mars	686·99749	686·979645	686·98814
Mercury	87·969702	87·969258	87·96939
Jupiter	4332·3206	4332·584821	4332·92322
Venus	224·698568	224·700786	224·70169
Saturn	10765·7730	10759·219817	10761·30664

277. In the first place it was thought unnecessary to observe in regard to planetary sidereal periods the same scrupulous adherence to Indian authorities which is incumbent in the case of the solar year and the moon's synodical month. In the next place, the difference in the length of the sidereal year between Indian and modern astronomy results in a slight displacement of the starting point of Indian celestial longitude, which displacement amounts to 7' 6·26"

in 50 years and should be added to the precession, amounting, according to modern astronomy, to $41^{\circ}52'27''$ for fifty years. The total difference between Indian sidereal and modern tropical longitudes is thus $48^{\circ}58'53''$ for 50 years or $59''$ per annum, while Bhâskara's estimate of the precession, $59.9007''$ per annum, is only slightly larger.

278. If the slight annual displacement of the zero point of Indian longitudes which is a practical postulate of Indian astronomy, however unrecognized in theory, is applied to the sidereal places of planets, their mean sidereal periods will have to be altered as shown above. In this manner alone will it be possible to apply to the planets the same precession as is applied to the sun, for the purpose of converting sidereal into tropical longitude.

N.B.—By taking this slight liberty with the mean sidereal periods of planets, the exact agreement of the mean place of any planet with its place in modern astronomy is secured, and the serious divergences between the two systems commented on in Whitney's notes on the *Surya Siddhanta* have been effectually avoided. As a result, the place, whether mean or actual, assigned to any planet in Tables XVII and XVIII, may not tally exactly with Indian calculations, but the difference will generally be found to be very slight, while there is an obvious advantage in having for every possible epoch a mean place for each planet, identical with that assigned to it by modern astronomy.

279. The planetary anomalies and annual equations, which were used for Tables XVII and XVIII of this work, were taken from *Warren's Kâla Sankalita* and are ascribed by that author to a local Telugu Astronomer of the time, called *Vavilâla Kuchinna*. The tables are no doubt old-fashioned, but they are handy and sufficiently accurate for the purposes of Indian horoscope-chronology. This is the main reason for resuscitating them into present-day use.

280. The figures as to longitudes of apses and nodes and the greatest apparent latitudes of planets (Table XVII) are taken, partly from Warren and partly from the *Siddhânta Siromani*.

PART IV—PLANETS AND PLANETARY CHRONOLOGY.

281. Indian astronomy reckons nine planets, spoken of collectively as *navagrahas* namely the Sun, Moon, Mars, Mercury, Jupiter, Venus, Saturn, Rahu and Ketu. It will be seen that the first seven are named in the order of the days of the week, and this is always the order in which they are referred to in Indian astronomy. Rahu is another name for the moon's ascending node, one of the points at which the moon's orbit cuts that of the Sun (the ecliptic), the other point, or the descending node, being called Ketu. An eclipse cannot happen except when the moon is at either node and the sun is at the same or the opposite node; hence the popular legend which depicts *Rahu* as a dragon swallowing up the moon or the sun at the time of an eclipse. All the planets, except Rahu and Ketu, move like the Sun, from West to East in their apparent path round the earth. Rahu moves in the opposite direction, and Ketu is always assigned a position 180° from that of Rahu.

282. All the data necessary for calculating the geocentric longitude and latitude of the five planets, Mars, Mercury, Jupiter, Venus and Saturn, are given at pages 200 to 206 of the Tables (Table XVII).

283. The longitude of any planet is its distance, measured in degrees, from an arbitrary point in the ecliptic, which point may perhaps best be defined as the 0 point of the Sun's mean longitude. The Sun's *mean* longitude is always 0 at a certain part of the Indian Solar Year, namely, at 2·1707 days from the commencement of each Indian Solar Year: while *at the moment of commencement* of the Indian Solar Year, the Sun's *actual* longitude is 0. The difference between the Sun's mean and actual longitude at any time is his equation of the centre, and this difference is due to his varying pace at different times of the year as he journeys round the earth. The Sun's mean longitude and equation for every complete day of the Solar Year are given in Table XVII-A (pp. 207, 208), and these are most important data in Indian astronomy. Table XVII-C (p. 209) gives the increase of the Sun's mean longitude for hundredth parts of a day.

284. The Sun's mean longitude at any moment is ascertained by deducting 2·1707 from the number of days and fraction of day elapsed since the commencement of the Indian Solar Year, and applying to the result the Table of Sun's longitude (Table VII-B, p. 8). The difference between the Sun's longitude thus calculated and the longitude for the same moment given in any European *Nautical Almanac*, is the true Indian precession, and this difference should always be added to the longitude of a planet given in this work in order to ascertain the corresponding longitude according to the *Nautical Almanac*. The following table gives the precession to be added to Indian celestial longitudes at various epochs since A.D. 520 (when the European and Indian longitudes coincided), in order to arrive at the European celestial longitude. The rate of precession adopted for this table is 1 degree for every $61\frac{1}{4}$ years, or 59'' per annum, the rate arrived at in Sec. **277** *supra*.

(The European longitude is called the *tropical* longitude of a planet from its being regulated by the tropical year, whereas the Indian longitude is generally called a *sidereal* longitude from its being regulated by the sidereal year.)

A.D.	Kaliyuga.	Indian Precession in Degrees.	A.D.	Kaliyuga.	Indian Precession in Degrees.	A.D.	Kaliyuga.	Indian Precession in Degrees.
520	3621	0·0	1040	4141	8·5	1561	4662	17·0
551	3652	0·5	1071	4172	9·0	1591	4692	17·5
581	3682	1·0	1102	4203	9·5	1622	4723	18·0
611	3712	1·5	1132	4233	10·0	1653	4754	18·5
642	3743	2·0	1163	4264	10·5	1684	4785	19·0
673	3774	2·5	1194	4295	11·0	1715	4816	19·5
704	3805	3·0	1225	4326	11·5	1745	4846	20·0
735	3836	3·5	1255	4356	12·0	1775	4876	20·5
765	3866	4·0	1285	4386	12·5	1806	4907	21·0
796	3897	4·5	1316	4417	13·0	1837	4938	21·5
826	3927	5·0	1347	4448	13·5	1867	4968	22·0
856	3957	5·5	1377	4478	14·0	1898	4999	22·5
887	3988	6·0	1408	4509	14·5	1929	5030	23·0
918	4019	6·5	1439	4540	15·0	1960	5061	23·5
949	4050	7·0	1469	4570	15·5	1990	5091	24·0
980	4081	7·5	1500	4601	16·0	2020	5121	24·5
1010	4111	8·0	1531	4632	16·5	2051	5152	25·0

285. We will now explain briefly how the planetary tables at pages 200 to 206 are to be used in practice.

The mean longitude of a planet at any moment is obtained by adding together its mean longitude at the commencement of the century, the mean motion for the given odd year, and the mean motion for the given day. Thus for 20254 days of the Indian Solar Year, A.D. 961 (Kaliyuga 4062) we have.—

	Degrees.
Mars' mean longitude at commencement of K.Y. 4001,	79°4873
Mar's mean longitude for 61 years,	155·72
" " " 202 days,	105·85
" " " ·54 day,	·2830
<i>Answer</i>	341·34°

286. This is the mean longitude of the planet in his path round the Sun, though not his longitude, as he appears to us from the earth. To obtain this, which is called the geocentric longitude, and which is the longitude usually cited in Indian chronology, we have to perform a fairly tedious sum. So far as the geocentric longitudes of the planets from A.D. 1840 to A.D. 1919 are concerned, the reader is saved the trouble of doing any such sum, because the geocentric longitudes, as finally determined for Lankâ Sunrise on every tenth day in each solar year from A.D. 1840 to A.D. 1919, are given in a handy form at pages 210 to 225 (Table XVIII), so that all he has to do to ascertain the position of the planets in a horoscope, say, for April 13, A.D. 1911, is to look up the particular day of the Solar Year (in this instance 0 day against A.D. 1911 on p. 224) and set down the positions of the planets as follows :—

Sun, $357^{\circ} + \cdot 4 + 2\cdot 7 = 360\cdot 1$ or $0\cdot 1^{\circ}$ in Mesha ;

Mars, $298\cdot4^{\circ}$, *i.e.*, $28\cdot4^{\circ}$ in Makara ;

Mercury, 16.3° in Mesha ;

Jupiter, 198.8° , *i.e.*, 18.8° in Tula;

Venus, 31.8° , *i.e.*, 1.8° in Vrishabha :

Saturn, $14^{\circ}3'$ in Mesha :

Rahu (Table XVII-B), A.D. 1911 : 21.90° in Mesha.

(N.B.--Only *mean* places, and not actuals, are calculated for Rahu and Ketu).

Ketu (*vide* Sec. **281**) $21.90^{\circ} + \text{or} - 180^{\circ} = 201.90^{\circ}$, *i.e.*, 21.90° in Kanyâ. The result for Ketu is the same, whether 180° are added to, or deducted from, the longitude of Rahu.

287. The place of the moon, the only remaining planet, can be deduced either from the tithi or from the Nakshatra. The latter method is illustrated in Sec. **292** *infra*. The former, which is easier, is shown below :—

We first of all calculate the ending moment of the tithi, as usual.

		d.	gh.	☉'s Anom.	d.	gh.	☾'s Anom.	d.	gh.
(Tab. XII, p. 151) New Moon, March 1911	...	Mar.	29	57½	350	45	22	16¼	
(Eye-Table) Collective duration of 15 tithis	...		14	46		14 46	14	46	
		Mar.	44	43½	365	31	37	2¼	
Deduct 1 anomalistic year and month respectively					365	15	27	33½	
(Eye-table) ☉'s Eqn.= + 10½ gh; ☾'s Eqn.= - 21 gh.							0	16	9 29
							☉'s Eqn.	+ 10½	
Sum of ☉'s and ☾'s Eqns.	...			- 10½				9	39½
		Mar.	44	33 = 33 gh.					on Ap. 13.

This was the ending moment of the tithi, when the moon's elongation or distance from the sun was $15 \times 12^\circ = 180^\circ$. For the moon's longitude at any moment = moon's elongation *plus* Sun's Longitude. (Secs. 36, 254.)

Therefore, if we find the Sun's longitude at ending moment of tithi and add it to the moon's elongation, 180° , we shall obtain the moon's longitude, or which is the same thing, the Nakshatra current at ending moment of tithi.

☉'s Longitude at Sunrise = 0.1° (see above).

Do. at ending moment of tithi = 0.1° *plus* increase of longitude for 33 ghat.
or $.55$ of a day (Eye-Table.) This increase, by Table XVII-C is $.54^\circ$.

∴ ☉'s Longitude at ending moment of tithi = $0.1^\circ + .54^\circ = 0.64^\circ$.

∴ Moon's do. do. do. = $180^\circ + 0.64^\circ = 180.64^\circ$.

The corresponding Nakshatra (by Eye-Table) was *Chitrâ*, and the Râsi *Tulâ*.

We want however the moon's longitude for sunrise on the same day which was 33 ghatikas or $.55$ day (Eye-Table) earlier.

The increase of ☾'s Long. for $.55$ day is roughly (Tab. XVII-D) 7.33°

∴ ☾'s Long. at Sunrise 13 Ap. A.D. 1911 will be roughly $180.64^\circ - 7.33^\circ = 173.31^\circ$

which will be 23.8° in Kanyâ. The Nakshatra is *Hasta*. (Eye-Table.)

N.B.—In strictness we should have ascertained the total duration of the Nakshatra and the unexpired part of the Nakshatra at sunrise. If this was $.50$, Table XVII-D would give us 6.6° which we should deduct from 180.64° . Result 174.0° which is *Chitra* Nakshatra.

288. For years before A.D. 1840 the true geocentric longitudes of planets will have to be calculated in the following manner :—

The planets are divided into two classes : *Inferior* (Mercury and Venus) and *Superior* (Mars, Jupiter and Saturn.) Three quantities, which we may call *a*, *b*, *v*, in the case of the inferior planets, Mercury and Venus, and *A*, *B*, *N*, in the case of the superior planets, Mars, Jupiter and Saturn, have to be determined first of all, before working out the actual geocentric longitude of any planet. Having determined these three quantities, the further procedure is the same, whether the planet is superior or inferior. We give below the calculations (1) for an *inferior* planet, Mercury, and (2) for a *superior* planet, Mars, for 202.54 days of the Solar Year A.D. 961 (*i.e.*, 9 ghatikas after sunrise on 11th October A.D. 961.)

1. *True Geocentric Longitude of Mercury for 202.54 days of the Indian Solar Year A.D. 961-62.*

Time and English date. 9 ghatikas after sunrise on 11th October A.D. 961.

MERCURY (Inferior Planet).(1)—*a*. Mean Long. of Mercury *minus* Mean Long. of Sun.

	Mean Long. of Mercury.		Mean Long. of Sun.
For A.D. 900 (p. 201)	173°55'	202 days (XVII-A)	196°95'
61 years „	100°37'	54 day (XVII-C)	53'
202 days (p. 202)	106°65'		
54 day	2°21'		197°48'
	<u>382°78'</u>		
Deduct	360°		
	<u>22°78'</u>		
			382°78'
			<u>-197°48'</u>
			185°30' <i>a</i>

(2)—*b*. Long. of Mercury's Apsis *minus* Sun's mean Long.

Long. of Mercury's Apsis for A.D. 900 (p. 201)*	... 220°44'
Sun's mean Long. (as above):	<u>-197°48'</u>
	22°96' <i>b</i>

(3)—*v*. Mean Long. of Sun... 197°48' *v*(4) Mercury's annual equation for *a* (p. 202):

- 3°0' (4)

(5) Take half of (4) with reversed sign, and add to *b*

... 22°96'

+ 1°5'

24°5' (5)

(6) Mercury's anomalistic equation for (5) (p. 242):

+ 1°9' (6)

(7) Take half of (6), with reversed sign, and add to (5)

... 24°5'

- 0°9'

23°6' (7)

(8) Anomalistic equation of (7) (p. 202):

+ 1°8' (8)

(9) Take (8), with reversed sign, and add to *a*

... 185°3'

- 1°8'

183°5' (9)

(10) Annual equation of (9) (p. 202):

- 2°0' (10)

(11) Add (8) and (10): +1°8' - 2°0' =

- 0°2' (11)

(12) Add *v* and (11): 197°48' - 0°2' =

197°3' (12)

This last result **197°3'** is the true **geocentric place of Mercury** for the moment in question.

* The apses and nodes of planets, except the moon, have such slow motions that their places need not be calculated for odd years and days.

289. II. To find the *latitude* of Mercury (*i.e.*, his distance above or below the ecliptic for the same moment.)

$$\begin{array}{rcl}
 (13) \text{ Mercury's mean longitude} & \dots & 22.78^\circ \\
 \text{minus Longitude of Mercury's node (p. 201):} & & - 20.72 \\
 \hline
 & & 2.06^\circ \quad (13)
 \end{array}$$

$$\begin{array}{rcl}
 (14) \text{ Take (8) above, with sign reversed, and add to (13):} & & - 1.8 \\
 \hline
 & & 0.3^\circ \quad (14)
 \end{array}$$

$$(15) \text{ Sine of (14) according to Table XVII-F (p. 209)} \quad \dots \quad 18 \quad (15)$$

(16) Equation corresponding to (9) *supra*, by Table XVII-E.

$$\text{Equation for } 183.75^\circ = 2173.$$

$$,, \quad ,, \quad .2^\circ = .05 \times 5 = .25.$$

$$\therefore \text{Equation for } 183.5^\circ = 2173 \text{ minus } .25 = 2172.75 \quad \dots \quad 2173 \quad (16)$$

(17) Multiply (15) by 120, as a constant for Mercury, and divide the product by (16)

$$\frac{120 \times 18}{2173} = \frac{2160}{2173} = .9.$$

Now by Table XVII-F, 225 is the sine of 3.75°

$$\therefore .9 \text{ is the sine of } \frac{3.75 \times .9}{225} = \frac{3.375}{225} = .015^\circ.$$

N.B.—The corresponding constants for the other planets are the sines of their greatest apparent latitudes, given at foot of Table XVII-E.

The latitude of Mercury is $.015^\circ$ and inasmuch as (14) is less than 180° , *i.e.*, above the ecliptic, the latitude $.015^\circ$ is North.

MARS (Superior Planet).

290. I. To find the *Geocentric Longitude of Mars* (Superior Planet) for 202.54 days in Solar Year A.D. 961-62.

Time and English date. 9 ghatikas after sunrise on 11th October A.D. 961.

(1) A. Mean longitude of Sun minus Mars' mean longitude.

$$\text{Mean longitude of Sun (already found) } 197.48^\circ \text{ or } 197.48^\circ + 360^\circ = 557.48^\circ$$

Mean longitude of Mars

$$\begin{array}{rcl}
 \text{For A.D. 900,} & 79.49^\circ & \\
 \text{" 61 years,} & 155.72^\circ & \\
 \text{" 202 days,} & 105.85^\circ & \\
 \text{" 54 day,} & .28^\circ & \\
 \hline
 & 341.34^\circ &
 \end{array}
 \left. \begin{array}{l} \\ \\ \\ \end{array} \right\} \begin{array}{l} \text{(Table XVII, p. 200.)} \\ \text{See also p. (104) } supra. \end{array}$$

$$\begin{array}{rcl}
 & & - 341.34^\circ \\
 \hline
 & & 216.14^\circ \text{ A}
 \end{array}$$

(2) B. Long. of Mars' Apsis *minus* mean long. of Mars.

Long. of Mars' Apsis [<i>vide</i> foot-note on p. (106)] (p. 200)	130°04'	or	190°04°	
Mean longitude of Mars	...	...	...	- 341°34°
				<hr/> 148°70°
(3) N. Mean longitude of Mars	...	...	...	341°34°
(4) 'Mars' annual equation for A (p. 200)	...	...	...	- 39°0°
(5) Take half of (4) with reversed sign, and add to B			...	148°70°
				<hr/> + 19°5'
				168°2°
(6) Mars' anomalistic equation for (5) (p. 201)	...	...	...	+ 2°4'
(7) Take half of (6), with reversed sign, and add to (5)			...	168°2°
				<hr/> - 1°2'
				167°0°
(8) Anomalistic equation of (7) (p. 201)	...	...	...	+ 2°7'
(9) Take (8) with reversed sign, and add to A	...	...	...	216°14°
				<hr/> - 2°7'
				213°4°
(10) Annual equation of (9) (p. 200)	...	...	...	- 38°0°
(11) Add (8) and (10) : + 2°7' - 38°0°	...	...	...	- 35°3°
(12) Add N and (11) : 341°34° - 35°3°	...	...	...	306°0°

The true **Geocentric Longitude** of Mars at the moment in question was **306.0°**

291. II. To find the latitude of Mars, *i.e.*, his distance above or below the Ecliptic for the same moment.

(13) Mars' true geocentric longitude	...	...	306.0°	
<i>minus</i> Longitude of Mars' node for A.D. 900, (Tab. XVII, p. 20)			- 40.07	
[<i>vide</i> foot-note on p. (106).]			<hr/>	
			265.93	(13)
(14) Take (10) above for Mars, with sign reversed, and add to (13):			+ 38.0	
			<hr/>	
			303.9°	(14)
(15) Sine of (14) according to Table XVII-F	...	...	2267	(15)
(16) Equation for (9) above, by Table XVII-E	...	...	2011	(16)
(17) Multiply (15) by 90, as a constant for Mars, and divide by (16)				

$$\frac{90 \times 2267}{2011} = \frac{2040 \cdot 30}{2011} = 101.$$

N.B.—The corresponding constants for the other planets are the sines of their greatest apparent latitudes, given at foot of Table XVII-E.

Now by Table XVII-F the sine 101 belongs to an angle between 0° and 3.75° .
 225 is the sine of 3.75°

$$\therefore 101 \quad , \quad \frac{101 \times 3.75}{225} = 1.68^\circ$$

\therefore The **latitude** of Mars sought is 1.7° which is South since (14) is above 180° .

292. *To find the longitude and latitude of the moon for the above moment.*

We should first of all find the moon's true longitude which we may calculate either from the tithi direct, with the aid of Table XVII-A and XVII-C (as we did in Sec. **287**), or from the Nakshatra. We shall follow the latter method, although the former is easier.

The last New moon before our date (11 Oct. A.D. 961) was that on September 12.74 (Table X, p. 73). This was Āśvina New moon. The tithi for our date is that corresponding to the interval between Oct. 11.02 and Sep. 12.74, or between 41.02 and 12.74, *i.e.*, 28.28 days. This, by Eye-Table, is less than the interval for 29 tithis, which is 28.55 days.

As our Nakshatra must fall on the same day as the Tithi, we must take a Nakshatra in the lunar month of Āśvina, whose interval, after correction, shall be near 28.55 days.

The Nakshatra correction for A.D. 961 is (by Tab. XI) that for 26.47 days, *i.e.*, 1.95 (correction for 26 days) + .03 (correction for .47 day) = 1.98, and $28.55 + 1.98 = 30.53$. This is 1 day more than a lunar month and an interval of 30.53 days from Āśvina New moon takes us to 1 day from Kārttika New moon. The nearest interval to this in Table XI is 1.0757 days under Kārttika (col. VII), for which the Nakshatra is No. 14 *Chitrā*.

The interval for No. 14 *Chitrā* is 1.0757 days from Kārttika New moon,
i.e., $1.08 + 29.53$ or 30.61 days from Āśvina New moon.

Deduct correction for A.D. 961 -1.98

Actual interval of No. 14 Nakshatra is 28.63 days from Āśvina New moon.

\therefore Time of mean ending moment of No. 14 Nakshatra was Sep. 12.74 + 28.63
 $=$ Sep. 41.37 = Oct. 11.37.

The ☾'s anomaly for the ending moment of the Nakshatra: 7.09 (Anomaly of First New moon in solar year A.D. 961, *vide* Tab. X, p. 72) + 9.88 (addition for ☾'s Anom. at Āśvina New moon: Table X, head line) + 28.63 (actual interval from Āśvina New moon to No. 14 Nakshatra) = 45.60 days, from which deduct 1 anom. month, 27.55. Remainder, 18.05 days.

The Nakshatra eqn. for 18.05 days is +.333 (Table IX-*k*). Nak. No. 14 *Chitrā* ended therefore on Oct. 11.37 + .33 = Oct. 11.70 or 42 ghaṭikas after sunrise (Eye-Table). The moment for which we want the moon's true place is earlier than this by .55 day, which (by Table XVII-D) corresponds to 7.33 degrees of moon's longitude. (See, however, *N.B.* to Section **287**.)

At the ending moment of No. 14 Nak. the **moon's longitude** is 186.7° (Eye-Table); the true place of moon at the moment now in question (9 ghaṭikas. after sunrise on 11 Oct. A.D. 169) was, therefore, $186.7^\circ - 7.3^\circ = 179.4^\circ$.

293. Now to find the Moon's latitude at the moment sought.

- (1) Find the place of Moon's node,
- i.e.*
- , Rahu.

By Table XVII-B place of Rahu for A.D. 900 is ... 147°65'

By same table Rahu's motion for 61 years, 100°52'

N.B.—Remember that Rahu's mean motion for odd years and days should be subtracted from the mean place for century—*vide* Sec. 295 (4).200 days, 10°60'
54 day, 03'

61 yrs. 200·54 days = 111·13

—111·13°

36·52° (1)

- (2) Moon's true place
- minus*
- place of her node ... 179·4°

—36·5

142·9 (2)

- (3) Sine of (2) by Table XVII-F ... 2094 (3)

- (4) Multiply (3) by
- $\frac{270}{3438}$
- , as a constant for the moon :
- $\frac{2094 \times 270}{3438} = 164$
- .

By Table XVII-F, 225 is the sine of 3·75°

$$\therefore 164 \quad \text{,,} \quad \frac{164 \times 3\cdot75}{225} = 2\cdot73^\circ$$

Inasmuch as (2) is less than 180°, the **latitude** sought is **2·73° North**.**294.** The reader should note—

- (a) that for Venus the procedure is the same as for Mercury ;
- (b) that for Jupiter and Saturn, the procedure is the same as for Mars ;
- (c) that for Mercury and Venus, the geocentric longitude has for its basis the Sun's mean longitude and not that of the planet ; whereas the geocentric places of Mars, Jupiter and Saturn are based on their respective mean longitudes ;
- (d) that we may always subtract a larger number of degrees from a smaller by adding 360° to the smaller number, as we did for (1) *a* on p. (106), for (1) *A* on p. (107) and for (2) *B* on p. (108) ;
- (e) that the apsis of any planet except the moon does not change materially in position during a century, and that therefore we need not calculate the change of apsis for odd years or odd days ; [*vide* foot note on p. (106)].
- (f) that after calculating *a*, *b* and *v*, and *A*, *B* and *N*, respectively, the procedure is the same for all planets, whether inferior or superior ;
- (g) that the mean longitudes of planets for decimals of a day may be obtained from the longitude for odd days by prefixing decimals to the latter. Only we should remember that a mean revolution of Mercury is completed in 87 days and a mean revolution of Venus in 225 days, [*vide* Sec. 276] and the increase of Mercury's longitude for 89 day is not 0·422°, but 3·6422°. Similarly, the increase of Venus' longitude for 231 day is not 0·1009°, but 3·7009° ;

- (h) that the latitudes of planets are not referred to in Indian usage except in what is known as a planetary fight in astrology ;
- (i) that the greatest apparent latitudes of the several planets and their corresponding Hindu sines are given at foot of Table XVII-E.

295. In using Table XVIII, *Geocentric (Indian) Longitudes of Sun and Major planets at Ujjain Sunrise for every ten days from A. D. 1840 to A. D. 1920*, the reader will do well to bear in mind the following instructions:—

(1) Table XVIII is intended to be of use in constructing or verifying the horoscopes of persons now living or to be born in the next nine years.

(2) The elements of a horoscope are the *râsi* positions of laghna, Sun, Moon, Mars, Mercury, Jupiter, Venus, Saturn, Rahu and Ketu.

(3) Of these, the positions of Sun,* Mars, Mercury, Jupiter, Venus and Saturn are given in Table XVIII.

(4) The *laghna* may be ascertained with the aid of the rules given in sections **71** to **76** *supra*. The position of Rahu for any day of the solar year may be ascertained from Table XVII-B. In using this table remember that the signs of Rahu are counted backwards and therefore the longitude of Rahu for odd years and days should be deducted from its longitude for centuries in order to arrive at its position at any moment. *Ketu* is always 180° from Rahu. It does not matter whether for Ketu we add or subtract 180° from Rahu's place: the result will always be the same.

(5) The position of the moon should be determined from her Nakshatra. It would have been no use to have given the position of the moon for every ten days of the year in Table XVIII, since her position shifts by 13° every day and is liable to considerable perturbations on account of her anomaly. Numerous examples are given in the text, showing how the moon's longitude may be ascertained either from the Tithi direct or from the ending moment of the Nakshatra. [See especially Sections **287** and **292**.]

(6) For planets other than Moon, Rahu and Ketu, Table XVIII gives precise information for every ten days, beginning each year with what is called 0 day of the solar year. The 0 day of the solar year is the day on which the solar year commences, as shown in Table X, not as shown in Table XII (Ephemeris). The English date shown in Table X in the 4th column headed "Month and day A.D.", is the 0 day of each solar year. For example, the 0 day of the solar year A.D. 1911-12 is April 13.

(7) English dates corresponding to days of the solar year are given most exactly in Table XVIII and not merely by approximation. The Tamil dates shown in the head-lines of Table XVIII are approximate: the exact Tamil date corresponding to any English date can be easily ascertained from Table XII.

* To the mean longitude of the Sun given in the second head-line of Table XVIII should be added the equation given in the third head-line, and the correction for \odot 's long. given under each particular year. See example in Sec. **286**.

(8) For dates *between* every 10th day which is shown in Table XVIII, take proportional parts.

Thus, position of Mercury on 23 May 1910 is 44.1°
 Do. do. do. 2 June 1910 is 36.6°

Difference for 10 days = 7.5°

\therefore Difference for 6 days = $\frac{6}{10} \times 7.5 = 4.55^\circ$

\therefore Position of Mercury at Ujjain sunrise on 29 May 1910 is $44.1^\circ - 4.5^\circ = 39.6^\circ$.

N.B.—Except in A.D. 1905, A.D. 1909 and A.D. 1913, the actual places of Mercury from A.D. 1886 to A.D. 1913 are practically identical with those for A.D. 1840 to 1873. In other words, Mercury's actual places follow in general a cycle of 46 years. Compare Sec. 228 regarding the moon's cycle of 46 years.

(9) The interval between the 360th day of each solar year and the 0 day of next solar year is either 5 or 6 days according as the former Indian solar year is one of 365 or 366 days. To ascertain this point, refer to Table X: if the fraction of day at which a year commences increases beyond unity in the next year, the year with the former fraction is one of 366 days; where there is no increase of fraction, the length of the year in integral days is 365.

Thus, fraction of day for commencement of A.D. 1909-10 is .9492

Do. do. do. 1910-11 is .2080

Do. do. do. 1911-12 is .4667

We infer that A.D. 1909-10 (Indian Solar Year) is a year of 366 days and that A.D. 1910-11 and A.D. 1911-12 are years of 365 days each. Of course an Indian Solar Year with 366 days will not, except by chance, correspond with an English leap year.

The difference in the longitude of any planet between the 360th day of one solar year and 0 day of the next solar year should be divided by 5 or 6 (according as the year is one of 365 or 366 days) in order to get the difference of longitude for *one day* during that interval, and the difference for one day should be multiplied by as many days as we want.

(10) Two English dates are marked in Table XVIII (just as in Table VIII, *vide* Sec. 215), when there is a possibility of a year with Feb. 29 alternating with a year in which February has only 28 days. Thus under 330th day on p. 225, "March 6, 7" is entered, which means that if before reaching either of these dates we have passed "February 29", March 6 is the equivalent of the 330th day of the Solar Year, otherwise March 7 is the 330th day.

(11) The positions marked in Table XVIII are all for Ujjain sunrise and any given moment for which we wish to verify or construct a horoscope should first be reduced to Ujjain time by adding or deducting the total correction for the place, day of the solar year and latitude shown in Table XIII or Table XIII-A. Of course the reader will remember that corrections shown in Table XIII are intended to enable him to obtain local time *from Ujjain time*, and that to obtain Ujjain time *from local time*, the signs of the corrections must be reversed.

(12) It is assumed that the reader knows the ordinary facts about the apparent motions of planets, *i.e.*, they are occasionally stationary or nearly so, and often in retrogression; that any planet is in conjunction with another whose longitude is the same; and in opposition when the distance between the longitudes of the two planets is 180° .

(13) The houses or signs in which the planets are situated according to Table XVII show only *occupation* (in the language of astrology). *Ownership* or *lordship* of houses by planets is purely an astrological convention and has nothing to do with astronomy.

(14) The entries at foot of Table XVIII show the limits or *ending* points of signs or *rāsis* and *nakshatras*, while the Eye-Table gives the longitude at *commencement* of each Rāsi or Nakshatra. Both sets of entries will be found very useful, and examples of their use are given throughout this work : see for example Sections **49, 186, 266, 287** ; foot-note to p. (45) of the text, etc.

(15) In order to keep the present work within its proper limits, it has been considered essential that the information furnished by it shall be such as will be directly useful for chronological investigation. That it may serve indirectly the purposes of Indian astrology is from the nature of the case, inevitable, but *judicial* astrology, or the interpretation of planetary phenomena for astrological purposes, is entirely beyond the author's scope : and it has been finally decided not to include in this book any criticism of judicial astrology.

Construction of Indian Horoscopes.—Navamsas.

296. Indian usage has, for a long time past, adopted a well-known method of exhibiting the places of planets at particular moments. This is the familiar horoscope, which, relieved of its astrological excrescence, has a scientific value as a chronological record ; since a genuine horoscope may, by the exercise of a little ingenuity, be always referred to its date, however remote that date may be, and even though there may not be a single figure indicative of an era or a year. It is for this chronological reason that horoscopes are introduced into this work.

Having ascertained the longitudes of planets and the lagna, which is merely a device for indicating the time of day without the use of figures (see Sections **71** to **76**), we may exhibit them in the form of a horoscope, as shown on the next page. This is a horoscope for the moment already examined, *viz.*, sunrise on 13 April 1911, being 0 day of the Indian Solar Year A.D. 1911-12, Kaliyuga 5012.

297. It might seem at first sight that the first of these tables, which distributes the planets among 12 signs of 30 degrees each, cannot serve the purposes of an accurate chronological record. It is a fact, however, that no other horoscope within perhaps 5000 years will be exactly like this one : and given such a horoscope as this, one may, without further indications, though after some trouble, discover the year ; and once the year is discovered, the month, day and hour can be identified in a few minutes.

298. In practice, it is usual for the astrologer or chronologer to frame a more detailed record, and as Indian tradition demands that figures should, as far as practicable, be dispensed with in chronological records, the details of degrees in a horoscope are given by means of a Navāmśa scheme such as that shown on the next page. In the Navāmśa scheme, each sign of 30° is sub-divided into 9 Navāmśas, whence their name, and 12 such Navāmśas constitute a full horoscope. Table XXI compares the Rāsis and Navāmśas, and shows how, given a Rāsi and the corresponding Navāmśa, the exact position of a planet can be indicated within three degrees. For instance, if we know that Śukra is in Rāsi **Vrishabha** (II) and Navāmśa **Makara** (X) we can, from the Navāmśa Table XXI, find that Śukra must be between 30° and 33·3° ; this is a fairly close approximation to the exact longitude.

Other divisions of the Rāsis into *dvādasāmsas* (12 divisions of 2½ degrees each), *trimsāmsas* (30 divisions of a degree each) and *shashthiamsas* (60 divisions of half a degree each), will be self-evident.

XII Mina OR Pisces.	I Mesha OR Aries Lagna Sun or Ravi Mercury or Budha Saturn or Sani Rahu.	II Vrishabha OR Taurus Venus or Sukra.	III Mithuna OR Gemini.
XI Kumbha OR Aquarius.	RASI.		IV Kataka OR Cancer.
X Makara OR Capricornus Mars or Kuja.			V Simha OR Leo.
IX Dhanus OR Sagittarius.	VIII Vrischika OR Scorpio.	VII Tula OR Libra Jupiter or Guru Ketu.	VI Kanya OR Virgo Moon or Chandra.

XII Mina Guru.	I Mesha Lagna Ravi.	II Vrishabha.	III Mithuna.
XI Kumbha.	NAVAMSA.		IV Kataka Chandra.
X Makara Sukra.			V Simha Budha Sani.
IX Dhanus.	VIII Vrischika.	VII Tula Rahu.	VI Kanya Kuja.



TABLES.



CORRIGENDA.

Text, p. (15), Sec. 32, last line, *for* Thibout, *read* Thibaut.

„ p. (28)—(31) and elsewhere, *for* laghna, *read* lagna.

„ p. (43), Sec. 112 (1). *for* “*adlendum*, p. (114)”, *read* “*adlenda*, p. 4 of ‘contents’.”

„ p. (43), Sec. 112 (5). *Kollam Era.* *for* “A.D. year *minus* 825”, *read* “A.D. year *minus* 824” and increase all the Kollam years shown against century years A.D. by 1. Thus K. year 76 began in A.D. 900, K. year 1076 began in A.D. 1900, and so on.

„ p. (80), Sec. 212, *for* the citation **228**, *read* **223**.

TABLE IX, p. 22, line 2, from top *for* 3·777, *read* 13·777.

„ X, p. 30	A.D. 126	‘s An. <i>for</i> 17·176	<i>read</i> 17·186.
„ p. 34	A.D. 210	„ „ 3·543	„ 3·643.
„ p. 36	A.D. 249	„ „ 10·213	„ 19·213.
„ p. 38	A.D. 281	„ „ 3·623	„ 2·620.
„ „	A.D. 310	„ „ 1·159	„ 21·159.
„ p. 46	A.D. 454	„ „ 14·381	„ 15·381.
„ p. 52	A.D. 565	„ „ 27·727	„ 0·172.
„ „	A.D. 566	„ „ 23·894	„ 23·884.
„ „	A.D. 568	„ „ 18·166	„ 18·176.
„ p. 56	A.D. 628	„ „ 23·985	„ 23·995.
„ „	A.D. 649	„ „ 14·234	„ 14·224.
„ „	A.D. 652	„ „ 4·694	„ 4·674.
„ p. 60	A.D. 729	„ „ 12·159	„ 12·139.
„ p. 62	A.D. 773	„ „ 12·489	„ 12·469.
„ p. 72	A.D. 961	„ „ 7·101	„ 7·091.
„ p. 76	A.D. 544	„ „ 10·277	„ 10·287.
„ p. 77	A.D. 731	„ „ 6·674	„ 6·684.
„ p. 78	A.D. 854	„ „ 8·170	„ 8·710.
„ „	A.D. 927	„ „ 1·985	„ 1·977.

„ XI, p. 132, under V Bhadrapada against Yoga No. 5, *for* 13·9813, *read* 13·9883.

„ XI-A, p. 134, under V Bhadrapada against Yoga No. 5, *for* 13,58,53 *read* 13,59,18.

„ „ p. 135, under VI Asvina against Yoga No. 16, *for* 20,13,28, *read* 20,14,4.

„ XII, To all the Kollam (Malayalam) years entered in col. 1 of Table XII add 1: thus, the Kollam year which began on 17 August 1911 is not K. 1086 as shown in Table XII, but K. 1087.

„ XVII, p. 200, against Odd Year 34, *for* 27·37, *read* 27·77.

„ „ „ 35 „ 219·81 „ 219·18.

„ p. 201, against Mar's Eqn. 11·0, *for* 352·2, *read* 252·2.

„ „ p. 203, line 4 from bottom, *for* 439·0, *read* 339·0.

„ „ „ „ line 5 from bottom, *for* 032·6, *read* 332·6.

TABLE I.

Corresponding A.D. years—(Centuries A.D. in heavy type).

(N.B.—The Indian year begins in March or April of the A.D. year.)

Names of years in Jupiter's Cycle.

(S. India.)

1	Prabhava	...	9	67	10	27	10	87	11	47	12	07	12	67	13	27	13	87	14	47	15	07	15	67	16	27	16	87	17	47	18	07	18	67
2	Vibhava	...		68		28		88		48		08		68		28		88		48		08		68		28		88		48		08		68
3	Sukla	...		69		29		89		49		09		69		29		89		49		09		69		29		89		49		09		69
4	Pramodhuta	...		70		30		90		50		10		70		30		90		50		10		70		30		90		50		10		70
5	Prajapati	...		71		31		91		51		11		71		31		91		51		11		71		31		91		51		11		71
6	Angirasa	...		72		32		92		52		12		72		32		92		52		12		72		32		92		52		12		72
7	Srimukha	...		73		33		93		53		13		73		33		93		53		13		73		33		93		53		13		73
8	Bhava	...		74		34		94		54		14		74		34		94		54		14		74		34		94		54		14		74
9	Yuva	...		75		35		95		55		15		75		35		95		55		15		75		35		95		55		15		75
0	Dhatri	...		76		36		96		56		16		76		36		96		56		16		76		36		96		56		16		76
1	Isvara	...		77		37		97		57		17		77		37		97		57		17		77		37		97		57		17		77
2	Bahudhanya	...		78		38		98		58		18		78		38		98		58		18		78		38		98		58		18		78
3	Pramathi	...		79		39		99		59		19		79		39		99		59		19		79		39		99		59		19		79
4	Vikrama	...		80		40	11	00		60		20		80		40	14	00		60		20		80		40	17	00		60		20		80
5	Vrisha	...		81		41		01		61		21		81		41		01		61		21		81		41		01		61		21		81
6	Chitrabhanu	...		82		42		02		62		22		82		42		02		62		22		82		42		02		62		22		82
7	Subhanu	...		83		43		03		63		23		83		43		03		63		23		83		43		03		63		23		83
8	Tarana	...		84		44		04		64		24		84		44		04		64		24		84		44		04		64		24		84
9	Parthiva	...		85		45		05		65		25		85		45		05		65		25		85		45		05		65		25		85
0	Vyaya	...		86		46		06		66		26		86		46		06		66		26		86		46		06		66		26		86
1	Sarvajit	...		87		47		07		67		27		87		47		07		67		27		87		47		07		67		27		87
2	Sarvadhari	...		88		48		08		68		28		88		48		08		68		28		88		48		08		68		28		88
3	Virodhi	...		89		49		09		69		29		89		49		09		69		29		89		49		09		69		29		89
4	Vikrita	...		90		50		10		70		30		90		50		10		70		30		90		50		10		70		30		90
5	Khara	...		91		51		11		71		31		91		51		11		71		31		91		51		11		71		31		91
6	Nandana	...		92		52		12		72		32		92		52		12		72		32		92		52		12		72		32		92
7	Vijaya	...		93		53		13		73		33		93		53		13		73		33		93		53		13		73		33		93
8	Jaya	...		94		54		14		74		34		94		54		14		74		34		94		54		14		74		34		94
9	Manmatha	...		95		55		15		75		35		95		55		15		75		35		95		55		15		75		35		95
0	Durmukha	...		96		56		16		76		36		96		56		16		76		36		96		56		16		76		36		96
1	Hemalamba	...		97		57		17		77		37		97		57		17		77		37		97		57		17		77		37		97
2	Vilamba	...		98		58		18		78		38		98		58		18		78		38		98		58		18		78		38		98
3	Vikari	...		99		59		19		79		39		99		59		19		79		39		99		59		19		79		39		99
4	Sarvari	...	10	00		60		20		80		40	13	00		60		20		80		40	16	00		60		20		80		40	19	00
5	Plava	...		01		61		21		81		41		01		61		21		81		41		01		61		21		81		41		01
6	Subhakrit	...		02		62		22		82		42		02		62		22		82		42		02		62		22		82		42		02
7	Sobhana	...		03		63		23		83		43		03		63		23		83		43		03		63		23		83		43		03
	(Sobhakrit)																																	
8	Krodhi	...		04		64		24		84		44		04		64		24		84		44		04		64		24		84		44		04
9	Visvavasu	...		05		65		25		85		45		05		65		25		85		45		05		65		25		85		45		05
0	Parabhava	...		06		66		26		86		46		06		66		26		86		46		06		66		26		86		46		06
1	Plavanga	...		07		67		27		87		47		07		67		27		87		47		07		67		27		87		47		07
2	Kilaka	...		08		68		28		88		48		08		68		28		88		48		08		68		28		88		48		08
3	Saumya	...		09		69		29		89		49		09		69		29		89		49		09		69		29		89		49		09
4	Sadharana	...		10		70		30		90		50		10		70		30		90		50		10		70		30		90		50		10
5	Virodhakrit	...		11		71		31		91		51		11		71		31		91		51		11		71		31		91		51		11
6	Paridhavi	...		12		72		32		92		52		12		72		32		92		52		12		72		32		92		52		12
7	Pramadicha	...		13		73		33		93		53		13		73		33		93		53		13		73		33		93		53		13
8	Ananda	...		14		74		34		94		54		14		74		34		94		54		14		74		34		94		54		14
9	Rakshasa	...		15		75		35		95		55		15		75		35		95		55		15		75		35		95		55		15
0	Anala (Nala)	...		16		76		36		96		56		16		76		36		96		56		16		76		36		96		56		16
1	Pingala	...		17		77		37		97		57		17		77		37		97		57		17		77		37		97		57		17
2	Kalayukta	...		18		78		38		98		58		18		78		38		98		58		18		78		38		98		58		18
3	Siddharthi	...		19		79		39		99		59		19		79		39		99		59		19		79		39		99		59		19
4	Raudra	...		20		80		40	12	00		60		20		80		40	15	00		60		20		80		40	18	00		60		20
5	Durmati	...		21		81		41		01		61		21		81		41		01		61		21		81		41		01		61		21
6	Dundubhi	...		22		82		42		02		62		22		82		42		02		62		22		82		42		02		62		22
7	Rudhirodgari	...		23		83		43		03		63		23		83		43		03		63		23		83		43		03		63		23
8	Raktaksha	...		24		84		44		04		64		24		84		44		04		64		24		84		44		04		64		24
9	Krodhana	...		25		85		45		05		65		25		85		45		05		65		25		85		45		05		65		25
0	Kshaya (Akshaya)	...		26		86		46		06		66		26		86		46		06		66		26		86		46		06		66		26

TABLE II.

Signs of Zodiac ; also names of Malabar Months.	Lunar Months ; also Bengal Solar Months.	Tamil Solar Months.	Surya Siddhanta.				—	Arya Siddhanta.		
			Number of days in each Solar Month.	Moment of Sankranti ; or No. of days up to beginning of each Solar Month.	Moment of each New Moon ; or No. of days up to beginning of each Lunar Month.	Increase of C's anomaly up to beginning of each Lunar Month.		No. of days in Anomalistic Months.	No. of days in each Solar Month.	Moment of Sankranti ; or No. of days up to beginning of each Solar Month.
Mesha (Mal. Medam)	Vaisakha	Chittirai	30·93528	...	...	...	1	27·5546	30·92500000	...
Vrishabha (Mal. Edavam)	Jyeshtha	Vaikasi	31·42028	30·93528	29·53059	1·976	2	55·1092	31·40111111	30·925000
Mithuna	Ashada	Ani	31·64472	62·35555	59·06117	3·952	3	82·6638	31·60722222	62·3261111
Karkata	Sravana	Adi	31·47528	94·00028	88·59176	5·928	4	110·2184	31·46777777	93·9333333
Simha	Bhadrapada	Avani	31·01861	125·47555	118·12235	7·904	5	137·7730	31·03472222	125·4011111
Kanya	Asvina	Purattasi	30·44138	156·49417	147·65293	9·880	6	165·3276	30·45666666	156·4358333
Tula	Kartika	Aippasi	29·89333	186·93555	177·18353	11·856	7	192·8822	29·90333333	186·8925000
Vrischika	Margasira	Kartikai	29·49027	216·82888	206·71411	13·832	8	220·4368	29·50861111	216·7958333
Dhanus	Pausha	Margali	29·31777	246·31916	236·24470	15·808	9	247·9914	29·35055555	246·3044444
Makara	Magha	Tai	29·44805	275·63694	265·77529	17·784	10	275·5460	29·45666666	275·6550000
Kumbha	Phalguna	Masi	29·82027	305·08499	295·30588	19·760	11	303·1006	29·80833333	305·1116666
Mina	Chaitra	Panguni	30·35348	334·90527	324·83647	21·736	12	330·6552	30·33876157	334·9200000
				365·25875	354·36705	23·712	13	358·2098		365·2586805
					383·89764	25·688				

Limits of Adhika months.

	Before.		Before.		After.	Before.
Vaisakha	1·40469	Bhadrapada	8·84122	...	...	...
Jyeshtha	3·29438	Asvina	9·75201	Phalguna	9·77912	10·06880
Ashada	5·40851	Kartika	10·11475	Chaitra	10·06880	10·89170
Sravana	7·35320	...	...	...	...	...

Limits of Kshaya months.

	After.	Before.
Margasira	10·07446	10·11475
Pausha	9·86164	10·07447
Magha	9·77910	9·86164
...

Tithis.

Duration of Tithis.		Names of Tithis.	Duration of Tithis.		Names of Tithis.	Duration of Tithis.		Names of Tithis.
days.			days.			days.		
0·98435	1	Sukla Pratipada	10·82788	11	Sukla Ekadasi	20·67141	6	Krishna Shashti
1·96870	2	Do. Dvitiya	11·81223	12	Do. Dvadasi	21·65576	7	Do. Saptami
2·95306	3	Do. Tritiya	12·79659	13	Do. Trayodasi	22·64012	8	Do. Ashtami
3·93741	4	Do. Chathurthi	13·78094	14	Do. Chaturdasi	23·62447	9	Do. Navami
4·92176	5	Do. Panchami	14·76529	15	Purnami	24·60882	10	Do. Dasami
5·90612	6	Do. Shashti	15·74965	1	Krishna Pratama	25·59318	11	Do. Ekadasi
6·89047	7	Do. Saptami	16·73400	2	Do. Dvitiya	26·57753	12	Do. Dvadasi
7·87482	8	Do. Ashtami	17·71835	3	Do. Tritiya	27·56188	13	Do. Trayodasi
8·85918	9	Do. Navami	18·70270	4	Do. Chathurthi	28·54623	14	Do. Chaturdasi
9·84353	10	Do. Dasami	19·68706	5	Do. Panchami	29·53059	15	Amavasya

TABLE III.

Nakshatras.					Yogas				
Order and names of Nakshatras.	Collective duration of Nakshatras (equal space).	Deities pre- siding over Nakshatras.	Duration of Nakshatras. (Garga.)	Duration of Nakshatras. (Brahma.)	Nakshatras and Yogas in lunation space.	Names of Yogas.	Collective duration of Yogas.		
								days.	days.
1 Asvini	1·01191	Asvin	1·01191	1·0	1 1·09372	1 Vishkamba.	0·94149		
2 Bharani	2·02383	Yama	1·51787	1·5	2 2·18745	2 Priti ...	1·88298		
3 Krittika	3·03574	Agni	2·52978	2·5	3 3·28118	3 Ayushmat ...	2·82447		
(Tam. Kiruttigai)					4 4·37490	4 Saubhagya.	3·76596		
4 Rohini	4·04765	Prajapati	4·04765	4·0	5 5·46863	5 Sobhana ...	4·70745		
5 Mrigasira	5·05957	Soma	5·05956	5·0					
(Tam. Mirugasiram)					6 6·56235	6 Atiganda ...	5·64894		
6 Ardhra	6·07148	Rudra	5·56552	5·5	7 7·65608	7 Sukarman ...	6·59043		
(Tam. Arudra or Tiru- vadirai)					8 8·74980	8 Dhriti ...	7·53192		
7 Punarvasu	7·08340	Aditi	7·08339	7·0	9 9·84353	9 Sula ...	8·47341		
8 Pushya	8·09531	Brihaspati	8·09531	8·0	10 10·93725	10 Ganda ...	9·41489		
(Tam. Pusam)									
9 Aslesha	9·10722	Sarpah	8·60126	8·5	11 12·03098	11 Vriddhi ...	10·35638		
(Tam. Ayilyam)					12 13·12470	12 Dhruva ...	11·29787		
10 Magha	10·11914	Pitarah	9·61318	9·5	13 14·21843	13 Vyaghata ...	12·23936		
(Tam. Magham)					14 15·31216	14 Harshana ...	13·18085		
11 Purva Phalguni	11·13105	Bhaga	10·62510	10·5	15 16·40588	15 Vajra ...	14·12234		
(Tam. Puram)									
12 Uttara Phalguni	12·14297	Aryaman	12·14297	12·0	16 17·49961	16 Siddhi ...	15·06383		
(Tam. Uttiram)					17 18·59333	17 Vyatipata ...	16·00532		
13 Hasta	13·15488	Savitri	13·15488	13·0	18 19·68706	18 Variyas ...	16·94681		
(Tam. Hastam)					19 20·78078	19 Parigha ...	17·88830		
14 Chitra	14·16679	Tvashtri	14·16679	14·0	20 21·87451	20 Siva ...	18·82979		
(Tam. Chittirai)									
15 Svati	15·17871	Vayu	14·67275	14·5	21 22·96823	21 Siddha ...	19·77128		
16 Visakha	16·19062	Indraghi	16·19062	16·0	22 24·06196	22 Sadhya ...	20·71277		
(Tam. Visakam)					23 25·15569	23 Subha ...	21·65426		
17 Anuradha	17·20273	Mitra	17·20253	17·0	24 26·24941	24 Sukla ...	22·59575		
(Tam. Anusham)					25 27·34314	25 Brahman ...	23·53724		
18 Jyeshtha	18·21445	Indra	17·70849	17·5	26 28·43686	26 Indra ...	24·47873		
(Tam. Kettai)					27 29·53059	27 Vaidhriti ...	25·42022		
19 Mula	19·22636	Nirriti	18·72040	18·5					
(Tam. Mulam)									
20 Purva Ashada	20·23828	Apah	19·73232	19·5					
(Tam. Puradam)									
21 Uttara Ashada	21·25019	Visvadeva	21·25019	21·0					
(Tam. Uttiradam)		Brahma		21·3217 (Abhijit)					
22 Sravana	22·26210	Vishnu	22·26210	22·3217					
(Tam. Tiruvonam)									
23 Sravishtha or Danishta	23·27402	Vasava	23·27401	23·3217					
(Tam. Avittam)									
24 Satabhisaj or Sataraka	24·28593	Varuna	23·77997	23·8217					
(Tam. Sadayam)									
25 Purva Bhadrapada	25·29785	Aja Ekapad	24·79188	24·8217					
(Tam. Purattadi)									
26 Uttara Bhadrapada	26·30976	Ahi Budhnya	26·30975	26·3217					
(Tam. Uttirattadi)									
27 Revati	27·32167	Pushan	27·32167	27·3217					

Karanas.

Kimstughna ...	1,	
Bava ...	2, 9, 16, 23, 30, 37, 44, 51,	58=Sakuni.
Balava ...	3, 10, 17, 24, 31, 38, 45, 52,	59=Naga.
Kaulava ...	4, 11, 18, 25, 32, 39, 46, 53,	60=Chatushpada.
Taitila ...	5, 12, 19, 26, 33, 40, 47, 54,	
Gara ...	6, 13, 20, 27, 34, 41, 48, 55,	
Banija ...	7, 14, 21, 28, 35, 42, 49, 56,	
Vishti ...	8, 15, 22, 29, 36, 43, 50, 57,	
(or Bhadra.)		

TABLE IV.
Perpetual Almanac for European Calendar.

		Centuries.							Week-day begin- ning from Sun- day which is 1.
		1	2	3	4	5	6	7 or 0	
B.C.	...	3001	3101	3201					
		2301	2401	2501	2601	2701	2801	2901	
		1601	1701	1801	1901	2001	2101	2201	
		901	1001	1101	1201	1301	1401	1501	
		201	301	401	501	601	701	801	
							1	101	
A.D. Old Style	}	...	500	400	300	200	100	0	
		...	1200	1100	1000	900	800	700	600
				1700	1600	1500	1400	1300	
A.D. New Style	}	...	1600	1900		1800		1700	
		...	2000	2300		2200		2100	

Odd Years.

1	2	3	4	5	6	7 or 0	Week-day begin- ning from Sun- day which is 1.
1	2	3	...	4	5	6	
7	...	8	9	10	11	...	
12	13	14	15	...	16	17	
18	19	...	20	21	22	23	
...	24	25	26	27	...	28	
29	30	31	...	32	33	34	
35	...	36	37	38	39	...	
40	41	42	43	...	44	45	
46	47	...	48	49	50	51	
...	52	53	54	55	...	56	
57	58	59	...	60	61	62	
63	...	64	65	66	67	...	
68	69	70	71	...	72	73	
74	75	...	76	77	78	79	
...	80	81	82	83	...	84	
85	86	87	...	88	89	90	
91	...	92	93	94	95	...	
96	97	98	99	...	...	...

Months.

		1	2	3	4	5	6	7 or 0	Week-day begin- ning from Sun- day which is 1.
Ordinary years.		Aug.	Feb. Mar. Nov.	Jun.	Sep. Dec.	Ap. Jul.	Jan. Oct.	May.	
Leap years	...	Feb.	...	...	...	Jan.	...	...	...

TABLE V.

Multip. Table for 1/1.0808. Mean time corresponding to Nakshatra-space.						Multip. Table for 1/1.1616. Mean time corresponding to Yoga-space.						Sun's Longitude for Nakshatras and Yogas.					
1	0.92520	34	31457	67	61988	1	0.86081	34	29267	67	57674	01	0008085	34	0274885	67	0541684
2	1.85040	35	32382	68	62913	2	1.72162	35	30128	68	58535	02	0016170	35	0282970	68	0549769
3	2.77560	36	33307	69	63839	3	2.58243	36	30989	69	59396	03	0024254	36	0291054	69	0557854
4	3.70080	37	34232	70	64764	4	3.44324	37	31850	70	60257	04	0032339	37	0299139	70	0565939
5	4.62599	38	35157	71	65689	5	4.30405	38	32711	71	61117	05	0040424	38	0307224	71	0574024
6	5.55119	39	36083	72	66614	6	5.16486	39	33572	72	61978	06	0048509	39	0315309	72	0582108
7	6.47639	40	37008	73	67539	7	6.02567	40	34432	73	62839	07	0056594	40	0323394	73	0590193
8	7.40159	41	37933	74	68465	8	6.88648	41	35293	74	63700	08	0064679	41	0331478	74	0598278
9	8.32679	42	38858	75	69390	9	7.74729	42	36154	75	64561	09	0072764	42	0339563	75	0606363
10	9.27199	43	39783	76	70315	10	8.60810	43	37015	76	65421	10	0080848	43	0347648	76	0614448
11	10.17719	44	40709	77	71240	11	9.46891	44	37876	77	66282	11	0088933	44	0355733	77	0622533
12	11.10239	45	41634	78	72165	12	10.32972	45	38736	78	67143	12	0097018	45	0363818	78	0630617
13	12.02759	46	42559	79	73091	13	11.19053	46	39597	79	68004	13	0105103	46	0371903	79	0638702
14	12.95279	47	43484	80	74016	14	12.05134	47	40458	80	68866	14	0113188	47	0379987	80	0646787
15	13.87799	48	44409	81	74941	15	12.91215	48	41319	81	69725	15	0121273	48	0388072	81	0654872
16	14.80318	49	45335	82	75866	16	13.77295	49	42180	82	70586	16	0129357	49	0396157	82	0662957
17	15.72838	50	46260	83	76791	17	14.63376	50	43040	83	71448	17	0137442	50	0404242	83	0671042
18	16.65358	51	47185	84	77717	18	15.49457	51	43901	84	72309	18	0145527	51	0412327	84	0679127
19	17.57878	52	48110	85	78642	19	16.35538	52	44762	85	73169	19	0153612	52	0420412	85	0687211
20	18.50398	53	49035	86	79567	20	17.21619	53	45623	86	74030	20	0161697	53	0428496	86	0695296
21	19.42918	54	49961	87	80492	21	18.07700	54	46484	87	74890	21	0169782	54	0436581	87	0703381
22	20.35438	55	50886	88	81417	22	18.93781	55	47344	88	75751	22	0177867	55	0444666	88	0711466
23	21.27958	56	51811	89	82343	23	19.79862	56	48205	89	76612	23	0185951	56	0452751	89	0719551
24	22.20478	57	52736	90	83268	24	20.65943	57	49066	90	77474	24	0194036	57	0460836	90	0727636
25	23.12998	58	53661	91	84193	25	21.52024	58	49927	91	78345	25	0202121	58	0468921	91	0735720
26	24.05518	59	54587	92	85118	26	22.38105	59	50788	92	79193	26	0210206	59	0477005	92	0743805
27	24.98037	60	55512	93	86043	27	23.24186	60	51649	93	80055	27	0218291	60	0485090	93	0751890
28	25.90557	61	56437	94	86969	28	24.10267	61	52509	94	80916	28	0226376	61	0493175	94	0759975
29	26.83077	62	57362	95	87894	29	24.96348	62	53370	95	81777	29	0234460	62	0501260	95	0768060
30	27.75597	63	58287	96	88819	30	25.82429	63	54231	96	82638	30	0242545	63	0509345	96	0776145
31	28.68117	64	59213	97	89744	31	26.68510	64	55092	97	83498	31	0250630	64	0517429	97	0784229
32	29.60637	65	60138	98	90669	32	27.54591	65	55953	98	84359	32	0258715	65	0525515	98	0792314
33	30.53157	66	61063	99	91595	33	28.40672	66	56830	99	85220	33	0266800	66	0533599	99	0800399

Multiplication Tables for Jupiter's Samvatsaras.

Jupiter's years in Solar years.	Increase of Jupiter's year for Solar days.	Jupiter's years in Solar years.	Increase of Jupiter's year for Solar days.	Jupiter's years in Solar years.	Increase of Jupiter's year for Solar days.	Jupiter's years in Solar years.	Increase of Jupiter's year for Solar days.	Jupiter's years in Solar years.	Increase of Jupiter's year for Solar days.	Jupiter's years in Solar years.	Increase of Jupiter's year for Solar days.	Jupiter's years in Solar years.	Increase of Jupiter's year for Solar days.
1.0117	1 .00277	18.2106	18 .04986	35.4095	35 .09694	52.6084	52 .14403	9.8073	69 .19112	27.0062	86 .23820	44.2071	44 .08518
2.0234	2 .00554	19.2223	19 .05263	36.4212	36 .09971	53.6201	53 .14680	10.8190	70 .19389	28.0179	87 .24097	45.2188	45 .08795
3.0351	3 .00831	20.2340	20 .05540	37.4329	37 .10248	54.6318	54 .14957	11.8307	71 .19666	29.0296	88 .24374	46.2305	46 .09072
4.0468	4 .01108	21.2457	21 .05817	38.4446	38 .10525	55.6435	55 .15234	12.8424	72 .19943	30.0413	89 .24651	47.2422	47 .09349
5.0585	5 .01385	22.2574	22 .06093	39.4563	39 .10802	56.6552	56 .15520	13.8541	73 .20220	31.0530	90 .24928	48.2539	48 .09626
6.0702	6 .01662	23.2691	23 .06371	40.4680	40 .11079	57.6669	57 .15788	14.8658	74 .20497	32.0647	91 .25205	49.2656	49 .09903
7.0819	7 .01939	24.2808	24 .06647	41.4797	41 .11356	58.6786	58 .16065	15.8775	75 .20774	33.0764	92 .25482	50.2773	50 .10180
8.0936	8 .02216	25.2925	25 .06924	42.4914	42 .11633	59.6903	59 .16342	16.8892	76 .21051	34.0881	93 .25759	51.2890	51 .10457
9.1053	9 .02493	26.3042	26 .07201	43.5031	43 .11910	60.7020	60 .16619	17.9009	77 .21328	35.0998	94 .26036	52.3007	52 .10734
10.1170	10 .02770	27.3159	27 .07478	44.5148	44 .12187	61.7137	61 .16896	18.9126	78 .21605	36.1115	95 .26313	53.3124	53 .11011
11.1287	11 .03047	28.3276	28 .07755	45.5265	45 .12464	62.7254	62 .17173	19.9243	79 .21881	37.1232	96 .26590	54.3241	54 .11288
12.1404	12 .03324	29.3393	29 .08032	46.5382	46 .12741	63.7371	63 .17450	20.9360	80 .22158	38.1349	97 .26867	55.3358	55 .11565
13.1521	13 .03601	30.3510	30 .08309	47.5499	47 .13018	64.7488	64 .17727	21.9477	81 .22435	39.1466	98 .27144	56.3475	56 .11842
14.1638	14 .03878	31.3627	31 .08586	48.5616	48 .13295	65.7605	65 .18004	22.9594	82 .22712	40.1583	99 .27421	57.3592	57 .12119
15.1755	15 .04155	32.3744	32 .08863	49.5733	49 .13572	66.7722	66 .18281	23.9711	83 .22989			58.3709	58 .12396
16.1872	16 .04432	33.3861	33 .09140	50.5850	50 .13849	67.7839	67 .18558	24.9828	84 .23266			59.3826	59 .12673
17.1989	17 .04709	34.3978	34 .09417	51.5967	51 .14126	68.7956	68 .18835	25.9945	85 .23543			60.3943	60 .12950

TABLE VI.

Surya Siddhanta Constants for
Centuries.Arya Siddhanta Constants for
Centuries.

Year A.D.	Kaliyuga.	Commence- ment of Solar Year.	Month	Frac- tion of day.	First new moon in Solar Year.	(C's anomaly at commencement of Solar Year.
1 B.C.	3101	13M	·98310	9·99810	12·73835	
100 A.D.	3201	14M	·85875	13·45974	1·21454	
200	3301	15M	·73440	16·92138	17·24532	
300	3401	16M	·61004	20·38302	5·72151	
400	3501	17M	·48569	23·84466	21·75228	
500	3601	18M	·36134	27·30630	10·22845	
600	3701	19M	·23698	1·23735	26·25922	
700	3801	20M	·11264	4·69899	14·73539	
800	3901	20M	·98828	8·16063	3·21156	
900	4001	21M	·86393	11·62227	19·24233	
1000	4101	22M	·73958	15·08391	7·71850	
1100	4201	23M	·61523	18·54556	23·74927	
1200	4301	24M	·49088	22·00720	12·22544	
1300	4401	25M	·36652	25·46884	0·70161	
1400	4501	26M	·24217	28·93048	16·73238	
1500	4601	27M	·11782	2·86153	5·20855	
1600	4701	27M	·99347	6·32317	21·35937	
1700	4801	28M	·86912	9·78481	9·83810	
1800	4901	10Ap	·74477	13·24645	25·87144	
1900	5001	12Ap	·62041	16·70809	14·35017	

Year A.D.	Kaliyuga.	Commence- ment of Solar Year.	Month	Frac- tion of day.	First new moon in Solar Year.	(C's anomaly at commencement of Solar Year.
1 B.C.	3101	14M	·020832	9·97497	12·44500	
100 A.D.	3201	14M	·888887	13·43662	0·91097	
200	3301	15M	·756943	16·89826	16·93155	
300	3401	16M	·624998	20·35990	5·39752	
400	3501	17M	·493054	23·82154	21·41810	
500	3601	18M	·361109	27·28318	9·88407	
600	3701	19M	·229165	1·22789	25·95007	
700	3801	20M	·097220	4·70320	14·46145	
800	3901	20M	·965276	8·17851	2·97285	
900	4001	21M	·833331	11·65383	19·03883	
1000	4101	22M	·701387	15·12914	7·55022	
1100	4201	23M	·569442	18·60446	23·61622	
1200	4301	24M	·437498	22·07977	12·12760	
1300	4401	25M	·305553	25·55508	0·63900	
1400	4501	26M	·173609	29·03039	16·70498	
1500	4601	27M	·041664	2·97511	5·21637	
1600	4701	27M	·909720	6·45043	21·28237	
1700	4801	28M	·777775	9·92574	9·79375	
1800	4901	10Ap	·645831	13·40105	25·85975	
1900	5001	12Ap	·513886	16·87636	14·37114	

Subsidiary Table VI (a) Difference between Moon's and Sun's Longitude in
days ($360^\circ = 29.5305880$ days).

Degrees.	Day	Minutes of degree.	Fraction of day.	Minutes of degree.	Fraction of day.	Minutes of degree.	Fraction of day.	Seconds of degree.	Fraction of day.	Seconds of degree.	Fraction of day.	Seconds of degree.	Fraction of day.
1	·0820294	1	·0013671	23	·0314447	45	·0615220	1	·0000228	23	·0005241	45	·0010254
2	·1640588	2	·0027343	24	·0328118	46	·0628892	2	·0000456	24	·0005469	46	·0010481
3	·2460882	3	·0041015	25	·0341789	47	·0642564	3	·0000683	25	·0005696	47	·0010707
4	·3281176	4	·0054687	26	·0355461	48	·0656235	4	·0000911	26	·0005924	48	·0010937
5	·4101471	5	·0068358	27	·0369132	49	·0669907	5	·0001139	27	·0006152	49	·0011165
6	·4921765	6	·0082030	28	·0382804	50	·0683578	6	·0001367	28	·0006380	50	·0011393
7	·5742059	7	·0095700	29	·0396475	51	·0697250	7	·0001595	29	·0006608	51	·0011621
8	·6562353	8	·0109373	30	·0410147	52	·0710921	8	·0001823	30	·0006836	52	·0011849
9	·7382647	9	·0123044	31	·0423819	53	·0724593	9	·0002051	31	·0007064	53	·0012076
10	·8202941	10	·0136716	32	·0437490	54	·0738265	10	·0002278	32	·0007291	54	·0012304
20	1·6405882	11	·0150387	33	·0451162	55	·0751936	11	·0002506	33	·0007519	55	·0012532
30	2·4608823	12	·0164059	34	·0464833	56	·0765608	12	·0002734	34	·0007747	56	·0012760
40	3·2811764	13	·0177730	35	·0478505	57	·0779279	13	·0002962	35	·0007975	57	·0012988
50	4·1014705	14	·0191402	36	·0492176	58	·0792951	14	·0003190	36	·0008203	58	·0013216
60	4·9217647	15	·0205073	37	·0505848	59	·0806622	15	·0003418	37	·0008434	59	·0013444
70	5·7420588	16	·0218745	38	·0519520			16	·0003646	38	·0008659	60	·0013671
80	6·5623529	17	·0232417	39	·0533191			17	·0003874	39	·0008886		
90	7·3826470	18	·0246088	40	·0546863			18	·0004101	40	·0009114		
100	8·2029411	19	·0259760	41	·0560534			19	·0004329	41	·0009342		
200	16·4058822	20	·0273431	42	·0574206			20	·0004557	42	·0009570		
300	24·6088233	21	·0287103	43	·0587877			21	·0004785	43	·0009798		
360	29·5305880	22	·0300775	44	·0601549			22	·0005013	44	·0010026		

TABLE VII.
Surya Siddhanta—Odd years.

Fraction of day, marking commencement of Solar Year.			First new moon in Solar Year.			☾'s anomaly for beginning of Solar Year.			Fraction of day, marking commencement of Solar Year.			First new moon in Solar Year.			☾'s anomaly for beginning of Solar Year.																																																																																																																																												
1	25876	18.63889	7.04896	38	83274	29.07418	19.86899	75	1.40673	9.97888	5.13443	76	66549	28.61776	12.18339	77	92424	17.72606	19.23235	78	1.18300	6.83436	26.28130	79	1.44176	25.47325	5.77566	80	70051	14.58155	12.82462	81	95927	3.68985	19.87358	82	1.21802	22.32873	26.92253	83	1.47678	11.43703	6.41689	84	73554	0.54533	13.46585	85	99430	19.18422	20.51481	86	1.25305	8.29252	0.00917	87	1.51181	26.93140	7.05812	88	77056	16.03970	14.10708	89	1.02932	5.14800	21.15604	90	1.28808	23.78689	0.65040	91	1.54683	12.89519	7.69935	92	80559	2.00349	14.74831	93	1.06434	20.64237	21.79727	94	1.32310	9.75067	1.29163	95	1.58186	28.38956	8.34059	96	84061	17.49786	15.38954	97	1.09937	6.60616	22.43850	98	1.35813	25.24504	1.93286	99	1.61688	14.35334	8.98182	100	87565	3.46164	16.03078	200	75130	6.92328	4.50696	300	62694	10.38492	20.53775	400	50259	13.84657	9.01393	500	37824	17.30821	25.04471	600	25389	20.76985	13.52089	700	12954	24.23149	1.99708	800	00519	27.69312	18.02786	900	88084	1.62418	6.50404	1000	75648	5.08582	22.53482	2000	51297	10.17164	17.51504	3000	26945	15.25746	12.49527

SUBSIDIARY TABLE VII (a)
Moon's Anomaly in days ($360^\circ = 27.5545999$ days).

Degrees.	Days.	Minutes of degree.	Fraction of day.	Minutes of degree.	Fraction of day.	Minutes of degree.	Fraction of day.	Seconds of degree.	Fraction of day.	Seconds of degree.	Fraction of day.	Seconds of degree.	Fraction of day.
1	0765405	1	0012757	23	0293405	45	0574054	1	0000215	23	0004890	45	0009568
2	1530811	2	0025513	24	0306162	46	0586811	2	0000425	24	0005103	46	0009780
3	2296217	3	0038270	25	0318919	47	0599568	3	0000638	25	0005315	47	0009993
4	3061622	4	0051027	26	0331676	48	0612324	4	0000850	26	0005528	48	0010205
5	3827028	5	0063784	27	0344432	49	0625081	5	0001063	27	0005740	49	0010418
6	4592433	6	0076540	28	0357189	50	0637838	6	0001276	28	0005953	50	0010631
7	5357839	7	0089297	29	0369946	51	0650595	7	0001488	29	0006166	51	0010843
8	6123244	8	0102054	30	0382703	52	0663351	8	0001701	30	0006378	52	0011056
9	6888650	9	0114811	31	0395459	53	0676108	9	0001913	31	000659	53	0011268
10	7654055	10	0127568	32	0408216	54	0688865	10	0002126	32	0006804	54	0011481
20	1.5308111	11	0140324	33	0420973	55	0701622	11	0002339	33	0007016	55	0011694
30	2.2962166	12	0153081	34	0433730	56	0714878	12	0002551	34	0007229	56	0011906
40	3.0616222	13	0165838	35	0446486	57	0727135	13	0002764	35	0007441	57	0012119
50	3.8270277	14	0178595	36	0459243	58	0739892	14	0002977	36	0007654	58	0012331
60	4.5924333	15	0191351	37	0472000	59	0752649	15	0003189	37	0007867	59	0012544
70	5.3578388	16	0204108	38	0484757	60	0765405	16	0003402	38	0008079	60	0012757
80	6.1232444	17	0216865	39	0497514			17	0003614	39	0008292		
90	6.8886499	18	0229622	40	0510270			18	0003827	40	0008504		
100	7.6540555	19	0242378	41	0523027			19	0004040	41	0008717		
200	15.3081110	20	0255135	42	0535784			20	0004252	42	0008930		
300	22.9621665	21	0267892	43	0548541			21	0004465	43	0009142		
360	27.5545999	22	0280649	44	0561297			22	0004677	44	0009355		

TABLE VII—contd.
Arya Siddhanta—Odd years.

	Fraction of day, marking commencement of Solar Year.	First new moon in Solar Year.	C's anomaly for beginning of Solar Year.		Fraction of day, marking commencement of Solar Year.	First new moon in Solar Year.	C's anomaly for beginning of Solar Year.		Fraction of day, marking commencement of Solar Year.	First new moon in Solar Year.	C's anomaly for beginning of Solar Year.
1	25868	18.63903	7.04931	38	82986	29.07937	19.88238	75	1.40104	9.98913	5.16084
2	51736	7.74745	14.09862	39	1.08854	18.18780	26.93169	76	65972	28.62815	12.21015
3	77604	26.38648	21.14793	40	34722	7.29624	6.42640	77	91840	17.73659	19.25916
4	03472	15.49492	0.64264	41	60590	25.93526	13.47571	78	1.17708	6.84502	26.30877
5	29340	4.60335	7.69195	42	86458	15.04370	20.52502	79	1.43576	25.48405	5.80348
6	55208	23.24238	14.74126	43	1.12326	4.15214	0.01973	80	69444	14.59249	12.85279
7	81076	12.35082	21.79057	44	38194	22.79116	7.06904	81	95312	3.70092	19.90210
8	06944	1.45924	1.28528	45	64062	11.89959	14.11835	82	1.21180	22.33994	26.95141
9	32812	20.09827	8.33459	46	89930	1.00803	21.16766	83	1.47048	11.44838	6.44612
10	58680	9.20671	15.38390	47	1.15799	19.64705	0.66237	84	72917	0.55681	13.49543
11	84549	27.84573	22.43321	48	41667	8.75549	7.71168	85	98785	19.19584	20.54474
12	10417	16.95417	1.92792	49	67535	27.39452	14.76099	86	1.24653	8.30428	0.03945
13	36285	6.06260	8.97723	50	93403	16.50294	21.81030	87	1.50521	26.94329	7.08876
14	62153	24.70162	16.02654	51	1.19271	5.61138	1.30500	88	76389	16.05173	14.13807
15	88021	13.81006	23.07585	52	45139	24.25041	8.35432	89	1.02257	5.16017	21.18738
16	13889	2.91850	2.57056	53	71007	13.35884	15.40363	90	1.28125	23.79919	0.68209
17	39757	21.55752	9.61987	54	96875	2.46728	22.45294	91	1.53993	2.90763	7.73140
18	65625	10.66596	16.66918	55	1.22743	21.10630	1.94764	92	79861	2.01607	14.78071
19	91493	29.30498	23.71849	56	48611	10.21474	8.99695	93	1.05729	20.65508	21.83002
20	17361	18.41341	3.21320	57	74479	28.85376	16.04627	94	1.31597	9.76352	1.32474
21	43229	7.52185	10.26251	58	1.00347	17.96219	23.09558	95	1.57465	28.40254	8.37405
22	69097	26.16088	17.31182	59	1.26215	7.07063	2.59028	96	83333	17.51098	15.42336
23	94965	15.26930	24.36113	60	52083	25.70966	9.63959	97	1.09201	6.61942	22.47267
24	20833	4.37774	3.85584	61	77951	14.81810	16.68890	98	1.35069	25.25844	1.96738
25	46701	23.01677	10.90515	62	1.03819	3.92653	23.73822	99	1.60937	14.36687	9.01668
26	72569	12.12520	17.95446	63	1.29687	22.56555	3.23292	100	86805	3.47531	16.06600
27	98437	1.23364	25.00377	64	55555	11.67399	10.28223	200	73611	6.95062	4.57738
28	24305	19.87267	4.49848	65	81423	0.78243	17.33154	300	60417	10.42593	20.64332
29	50174	8.98109	11.54779	66	1.07292	19.42144	24.38086	400	47222	13.90124	9.15466
30	76042	27.62012	18.59710	67	1.33160	8.52989	3.87556	500	34028	17.37655	25.22064
31	1.01910	16.72856	25.64641	68	59028	27.16891	10.92488	600	20833	20.85186	13.73203
32	27778	5.83699	5.14112	69	84896	16.27734	17.97419	700	07639	24.32717	2.24342
33	53646	24.47602	12.19043	70	1.10764	5.38578	25.02350	800	94444	27.80248	18.30941
34	79514	13.58446	19.23974	71	1.36632	24.02480	4.51820	900	81250	1.74720	6.82080
35	1.05382	2.69288	26.28905	72	62500	13.13323	11.56751	1000	68055	5.22251	22.88679
36	31250	21.33191	5.78376	73	88368	2.24167	18.61682	2000	36111	10.44502	18.21898
37	57118	10.44035	12.83307	74	1.14236	20.88070	25.66613	3000	04166	15.66753	13.55117

SUBSIDIARY TABLE VII (b)

Sun's Longitude in days ($360^\circ = 365.258756484$ days).

Degrees.	Days.	Degrees.	Days	Minutes of degree.	Fraction of day.	Minutes of degree.	Fraction of day.	Minutes of degree.	Fraction of day.	Minutes of degree.	Fraction of day.	Minutes of degree.	Fraction of day.
1	1.0146076	40	40.5843064	1	0.0169101	13	2.198316	25	4.227532	37	6.256747	49	8.285962
2	2.0292153	50	50.7303830	2	0.0338202	14	2.367418	26	4.396633	38	6.425848	50	8.455063
3	3.0438230	60	60.8764596	3	0.0507304	15	2.536519	27	4.565734	39	6.594949	51	8.624165
4	4.0584306	70	71.0225362	4	0.0676405	16	2.705620	28	4.734835	40	6.764051	52	8.793266
5	5.0730383	80	81.1686128	5	0.0845506	17	2.874722	29	4.903937	41	6.933152	53	8.962367
6	6.0876460	90	91.3146894	6	0.1014608	18	3.043823	30	5.073038	42	7.102253	54	9.131468
7	7.1022536	100	101.4607660	7	0.1183709	19	3.212924	31	5.242139	43	7.271355	55	9.300570
8	8.1168613	200	202.9215320	8	0.1352810	20	3.382025	32	5.411241	44	7.440456	56	9.469671
9	9.1314689	300	304.3822980	9	0.1521911	21	3.551127	33	5.580342	45	7.609557	57	9.638772
10	10.1460766	360	365.2587565	10	0.1691013	22	3.720228	34	5.749443	46	7.778658	58	9.807874
20	20.2921532			11	0.1860114	23	3.889329	35	5.918544	47	7.947760	59	9.976975
30	30.4382298			12	0.2029215	24	4.058430	36	6.087646	48	8.116861	60	1.0146076

TABLE VIII.

CALENDAR FOR ASCERTAINING THE A.D. MONTH AND DAY CORRESPONDING TO ANY SOLAR DATE, LUNAR TITHI, NAKSHATRA, YOGA OR KARANA.

[N.B.—The Solar days and Fractions of days, Tithis and ending moments of Tithis, and Moon's Anomaly should be added to the elements given in Tables VI and VII for Centuries and odd years. See the Text for instructions on this subject.]

Week-day.	* Days reckoned from			Day of Solar Month.	Day of Solar Year.	Ending moment of Tithi.	Tithi No.	☾'s An. for each Tithi.	☾'s Long. for Nakshatras and Yogas.	Week-day.	* Days reckoned from			Day of Solar Month.	Day of Solar Year.	Ending moment of Tithi.	Tithi No.	☾'s An. for each Tithi.	☾'s Long. for Nakshatras and Yogas.
	Jan.	Mar.	Apr.								Jan.	Mar.	Apr.						
	1	1	1								1	1	1						
Chittirai. (Mal.) Medam. Jan. Mar. Apr. (Beng.) Vaisakha.										Vaisakha. Feb. Apr. May. Vai.									
1	1	1	1	0	0	·9843	1	0·984	...	1	12	12	13	13	43	·3115	14	15·757	3·3010
2	2	2	2	1	1	·9687	2	1·969	29·4150	2	13	13	14	14	44	·2959	15	16·741	3·3818
3	3	3	3	2	2	·9530	3	2·953	29·4959	3	14	14	15	15	45	·2802	1	17·726	3·4627
4	4	4	4	3	3	·9374	4	3·937	·0670	4	15	15	16	16	46	·2646	2	18·710	3·5435
5	5	5	5	4	4	·9217	5	4·921	·1479	5	16	16	17	17	47	·2489	3	19·694	3·6244
6	6	6	6	5	5	·9061	6	5·906	·2287	6	17	17	18	18	48	·2333	4	20·679	3·7052
7	7	7	7	6	6	·8904	7	6·890	·3096	7	18	18	19	19	49	·2176	5	21·663	3·7861
1	8	8	8	7	7	·8748	8	7·875	·3904	1	19	19	20	20	50	·2020	6	22·647	3·8669
2	9	9	9	8	8	·8592	9	8·859	·4713	2	20	20	21	21	51	·1863	7	23·632	3·9478
3	10	10	10	9	9	·8435	10	9·843	·5521	3	21	21	22	22	52	·1707	8	24·616	4·0286
4	11	11	11	10	10	·8279	11	10·827	·6330	4	22	22	23	23	53	·1551	9	25·600	4·1095
5	12	12	12	11	11	·8122	12	11·812	·7138	5	23	23	24	24	54	·1394	10	26·585	4·1903
6	13	13	13	12	12	·7966	13	12·797	·7947	6	24	24	25	25	55	·1238	11	0·015	4·2712
7	14	14	14	13	13	·7809	14	13·781	·8755	7	25	25	26	26	56	·1081	12	0·999	4·3520
1	15	15	15	14	14	·7652	15	14·765	·9564	1	26	26	27	27	57	·0925	13	1·983	4·4329
2	16	16	16	15	15	·7496	1	15·750	1·0372	2	27	27	28	28	58	·0768	14	2·968	4·5137
3	17	17	17	16	16	·7340	2	16·734	1·1181	3	28	28	29	29	59	·0612	15	3·952	4·5945
4	18	18	18	17	17	·7183	3	17·718	1·1989	4	29, 1	29	30	30	60	·0455	1	4·936	4·6754
5	19	19	19	18	18	·7027	4	18·703	1·2798	5	1, 2	30	31	31	61	·0299	2	5·921	4·7562
6	20	20	20	19	19	·6870	5	19·687	1·3606	6	2, 3	1	1	31	62	·0142	3	6·905	4·8371
7	21	21	21	20	20	·6714	6	20·671	1·4415	...	...	...	...	...	62	·9986	4	7·889	...
1	22	22	22	21	21	·6557	7	21·656	1·5223	Sankranti. { Day of month. S. Sid. 31·4203 A. Sid. 31·4011 " year. " 62·3555 " 62·3261									
2	23	23	23	22	22	·6401	8	22·640	1·6032	Ani. (Mal.) Mithunam.									
3	24	24	24	23	23	·6244	9	23·624	1·6840	Mar. May. June. (Beng.) Ashada. Ashada (Lunar).									
4	25	25	25	24	24	·6088	10	24·609	1·7649	7	3, 4	2	2	1	63	·9829	5	8·874	4·9179
5	26	26	26	25	25	·5932	11	25·593	1·8457	1	4, 5	3	3	2	64	·9673	6	9·858	4·9988
6	27	27	27	26	26	·5775	12	26·577	1·9266	2	5, 6	4	4	3	65	·9516	7	10·842	5·0796
7	28	28	28	27	27	·5619	13	0·007	2·0074	3	6, 7	5	5	4	66	·9360	8	11·827	5·1605
1	29	29	29	28	28	·5462	14	0·992	2·0882	4	7, 8	6	6	5	67	·9203	9	12·811	5·2413
				29	29	·5306	15	1·976	2·1691	5	8, 9	7	7	6	68	·9047	10	13·795	5·3222
Jyeshtha. 2 30 30 30 30 30 ·5149 1 2·960 2·2499										6	9, 10	8	8	7	69	·8891	11	14·780	5·4030
Sankranti. { S. Sid. 30·9353 days. A. Sid. 30·9250 days.										7	10, 11	9	9	8	70	·8734	12	15·764	5·4839
Vaikasi. (Mal.) Edavam.										1	11, 12	10	10	9	71	·8578	13	16·749	5·5647
Jan. Mar. May. (Beng.) Jyeshtha. Jyeshtha (Lunar).										2	12, 13	11	11	10	72	·8421	14	17·733	5·6456
3	31	31	1	1	31	·4993	2	3·945	2·3308	3	13, 14	12	12	11	73	·8265	15	18·717	5·7264
4	1	1	2	2	32	·4836	3	4·929	2·4116	4	14, 15	13	13	12	74	·8108	1	19·702	5·8073
5	2	2	3	3	33	·4680	4	5·913	2·4925	5	15, 16	14	14	13	75	·7952	2	20·686	5·8881
6	3	3	4	4	34	·4523	5	6·898	2·5733	6	16, 17	15	15	14	76	·7795	3	21·670	5·9690
7	4	4	5	5	35	·4367	6	7·882	2·6542	7	17, 18	16	16	15	77	·7639	4	22·655	6·0498
1	5	5	6	6	36	·4210	7	8·866	2·7350	1	18, 19	17	17	16	78	·7482	5	23·639	6·1307
2	6	6	7	7	37	·4054	8	9·851	2·8159	2	19, 20	18	18	17	79	·7326	6	24·623	6·2115
3	7	7	8	8	38	·3898	9	10·835	2·8967	3	20, 21	19	19	18	80	·7169	7	25·608	6·2924
4	8	8	9	9	39	·3741	10	11·819	2·9776	4	21, 22	20	20	19	81	·7013	8	26·592	6·3732
5	9	9	10	10	40	·3585	11	12·804	3·0584	5	22, 23	21	21	20	82	·6856	9	0·022	6·4541
6	10	10	11	11	41	·3428	12	13·788	3·1393	6	23, 24	22	22	21	83	·6700	10	1·006	6·5349
7	11	11	12	12	42	·3272	13	14·773	3·2201	7	24, 25	23	23	22	84	·6543	11	1·991	6·6158
										1	25, 26	24	24	23	85	·6387	12	2·975	6·6965
										2	26, 27	25	25	24	86	·6231	13	3·959	6·7775
										3	27, 28	26	26	25	87	·6074	14	4·944	6·8583
										4	28, 29	27	27	26	88	·5918	15	5·928	6·9392

* When two dates are given in any of these columns, use the first in a leap year; otherwise use the second.

TABLE VIII.

Week-day.	Days reckoned from			Day of Solar Month.	Day of Solar Year.	Ending moment of Tithi.	Tithi No.	C's An. for each Tithi.	C's Long. for Nakshatras and Yogas.
	Jan. 1	Mar. 1	Apr. 1						
	Mar.	May.	June.	Ani.	Sravana.				
5	29,30	28	28	27	89	5761	1	6-912	7-0200
6	30,31	29	29	28	90	5605	2	7-897	7-1008
7	31, 1	30	30	29	91	5448	3	8-881	7-1817
	Apr.		July.						
1	1, 2	31	1	30	92	5292	4	9-865	7-2622
		June.							
2	2, 3	1	2	31	93	5135	5	10-850	7-3434
3	3, 4	2	3	31	94	4979	6	11-834	7-4242
Sankranti. { Day of month. S. Sid. 31-6447 A. Sid. 31-6072									
{ " year. " 94-0003 " 93-9333									
Adi.									
(Mal.) Karkatagam.									
	Apr.	June.	Jul.	(Beng.)	Sravana.	Sravana (Lunar).			
4	4, 5	3	4	1	95	4822	7	12-818	7-5051
5	5, 6	4	5	2	96	4666	8	13-803	7-5859
6	6, 7	5	6	3	97	4509	9	14-787	7-6668
7	7, 8	6	7	4	98	4353	10	15-771	7-7476
1	8, 9	7	8	5	99	4196	11	16-756	7-8285
2	9,10	8	9	6	100	4040	12	17-740	7-9093
3	10,11	9	10	7	101	3883	13	18-725	7-9902
4	11,12	10	11	8	102	3727	14	19-709	8-0710
5	12,13	11	12	9	103	3571	15	20-693	8-1518
6	13,14	12	13	10	104	3414	1	21-678	8-2327
7	14,15	13	14	11	105	3258	2	22-662	8-3136
1	15,16	14	15	12	106	3101	3	23-646	8-3944
2	16,17	15	16	13	107	2945	4	24-631	8-4753
3	17,18	16	17	14	108	2788	5	25-615	8-5561
4	18,19	17	18	15	109	2632	6	26-599	8-6370
5	19,20	18	19	16	110	2475	7	0-029	8-7178
6	20,21	19	20	17	111	2319	8	1-013	8-7987
7	21,22	20	21	18	112	2162	9	1-998	8-8795
1	22,23	21	22	19	113	2006	10	2-982	8-9604
2	23,24	22	23	20	114	1849	11	3-966	9-0412
3	24,25	23	24	21	115	1693	12	4-951	9-1221
4	25,26	24	25	22	116	1536	13	5-935	9-2029
5	26,27	25	26	23	117	1380	14	6-920	9-2838
6	27,28	26	27	24	118	1223	15	7-904	9-3646
Bhadrapada.									
7	28,29	27	28	25	119	1067	1	8-888	9-4455
1	29,30	28	29	26	120	0911	2	9-873	9-5263
2	30,31	29	30	27	121	0754	3	10-857	9-6071
	May.								
3	1, 2	30	31	28	122	0598	4	11-841	9-6880
		Jul.	Aug.						
4	2, 3	1	1	29	123	0441	5	12-826	9-7688
5	3, 4	2	2	30	124	0285	6	13-810	9-8497
6	4, 5	3	3	31	125	0128	7	14-794	9-9305
...	...	...	...	31	125	9972	8	15-779	...
Sankranti. { Day of month. S. Sid. 31-4753 A. Sid. 31-4677									
{ " year. " 125-4755 " 125-4011									
Avani. Bhadrapada (Lunar).									
(Mal.) Chingam.									
	May.	Jul.	Aug.	(Beng.)	Bhadrapada.				
7	5, 6	4	4	1	126	9815	9	16-763	10-0114
1	6, 7	5	5	2	127	9659	10	17-747	10-0922
2	7, 8	6	6	3	128	9502	11	18-732	10-1731
3	8, 9	7	7	4	129	9346	12	19-716	10-2539
4	9,10	8	8	5	130	9189	13	20-700	10-3348
5	10,11	9	9	6	131	9033	14	21-685	10-4156
6	11,12	10	10	7	132	8876	15	22-669	10-4965
7	12,13	11	11	8	133	8720	1	23-654	10-5773

* When two dates are given in any of these columns, use the first in a leap year ; otherwise use the second.

Week-day.	* Days reckoned from			Day of Solar Month.	Day of Solar Year.	Ending moment of Tithi.	Tithi No.	☾'s An. for each Tithi.	☉'s Long for Nakshatras and Yogas.
	Jan. 1	Mar. 1	Apr. 1						
	May.	Jul.	Aug.	Avani.	Bhadrapada (Lunar).				
1	13,14	12	12	9	134	·8563	2	24·638	10·6582
2	14,15	13	13	10	135	·8407	3	25·622	10·7390
3	15,16	14	14	11	136	·8251	4	26·607	10·8199
4	16,17	15	15	12	137	·8094	5	0·036	10·9007
5	17,18	16	16	13	138	·7938	6	1·021	10·9816
6	18,19	17	17	14	139	·7781	7	2·005	11·0624
7	19,20	18	18	15	140	·7625	8	2·989	11·1433
1	20,21	19	19	16	141	·7468	9	3·974	11·2241
2	21,22	20	20	17	142	·7312	10	4·958	11·3050
3	22,23	21	21	18	143	·7155	11	5·942	11·3858
4	23,24	22	22	19	144	·6999	12	6·927	11·4667
5	24,25	23	23	20	145	·6842	13	7·911	11·5475
6	25,26	24	24	21	146	·6686	14	8·896	11·6284
7	26,27	25	25	22	147	·6529	15	9·880	11·7092
Asvina.									
1	27,28	26	26	23	148	·6373	1	10·864	11·7908
2	28,29	27	27	24	149	·6216	2	11·849	11·8706
3	29,30	28	28	25	150	·6060	3	12·833	11·9515
4	30,31	29	29	26	151	·5904	4	13·817	12·0321
5	31, 1	30	30	27	152	·5747	5	14·802	12·1130
6	June. 1, 2	31	31	28	153	·5591	6	15·786	12·1943
7	2, 3	Aug. 1	Sep. 1	29	154	·5434	7	16·770	12·2759
1	3, 4	2	2	30	155	·5278	8	17·755	12·3568
2	4, 5	3	3	31	156	·5121	9	18·739	12·4367
Sankranti.	{	Day of month.		S. Sid.	31·0186	A. Sid.		31·0347	
		" year.		"	156·4942	"		156·4358	
Purattasi.									
(Mal.) Kanni.									
	June.	Aug.	Sep.	(Beng.)	Asvina.	Asvina (Lunar).			
3	5, 6	4	4	1	157	·4965	10	19·723	12·5177
4	6, 7	5	5	2	158	·4808	11	20·708	12·5985
5	7, 8	6	6	3	159	·4652	12	21·692	12·6794
6	8, 9	7	7	4	160	·4495	13	22·676	12·7602
7	9,10	8	8	5	161	·4339	14	23·661	12·8411
1	10,11	9	9	6	162	·4182	15	24·645	12·9219
2	11,12	10	10	7	163	·4026	1	25·630	13·0028
3	12,13	11	11	8	164	·3869	2	26·614	13·0836
4	13,14	12	12	9	165	·3713	3	0·044	13·1645
5	14,15	13	13	10	166	·3556	4	1·028	13·2453
6	15,16	14	14	11	167	·3400	5	2·012	13·3262
7	16,17	15	15	12	168	·3244	6	2·997	13·4070
1	17,18	16	16	13	169	·3087	7	3·981	13·4879
2	18,19	17	17	14	170	·2931	8	4·965	13·5687
3	19,20	18	18	15	171	·2774	9	5·950	13·6496
4	20,21	19	19	16	172	·2618	10	6·934	13·7304
5	21,22	20	20	17	173	·2461	11	7·918	13·8113
6	22,23	21	21	18	174	·2305	12	8·903	13·8921
7	23,24	22	22	19	175	·2148	13	9·887	13·9

TABLE VIII.

* Days reckoned from			Day of Solar Month.	Day of Solar Year.	Ending moment of Tithi.	Tithi.	☾'s An. for each Tithi.	☉'s Long. for Nakshatras and Yogas.
Jan. 1	Mar. 1	Apr. 1						
Sankranti. { Day of month. S. Sid. 30-4414 A. Sid. 30-4567								
" " year. " 186-9355 " 186-8925								
Aippasi.								
(Mal.) Tulam.								
Jul.	Sep.	Oct.	(Beng.) Kartika.	Kartika (Lunar).				
5, 6	3	4	1	187	0271	10	21-699	14-9431
6, 7	4	5	2	188	0114	11	22-684	15-0040
...	...	...	...	188	9958	12	23-668	...
7, 8	5	6	3	189	9801	13	24-652	15-1248
8, 9	6	7	4	190	9645	14	25-637	15-1857
9, 10	7	8	5	191	9488	15	26-621	15-2665
10, 11	8	9	6	192	9332	1	0-051	15-3474
11, 12	9	10	7	193	9175	2	1-035	15-4282
12, 13	10	11	8	194	9019	3	2-020	15-5090
13, 14	11	12	9	195	8862	4	3-004	15-5899
14, 15	12	13	10	196	8706	5	3-988	15-6708
15, 16	13	14	11	197	8549	6	4-973	15-7516
16, 17	14	15	12	198	8393	7	5-957	15-8325
17, 18	15	16	13	199	8236	8	6-941	15-9133
18, 19	16	17	14	200	8080	9	7-926	15-9942
19, 20	17	18	15	201	7924	10	8-910	16-0750
20, 21	18	19	16	202	7767	11	9-894	16-1559
21, 22	19	20	17	203	7611	12	10-879	16-2367
22, 23	20	21	18	204	7454	13	11-863	16-3176
23, 24	21	22	19	205	7298	14	12-848	16-3984
24, 25	22	23	20	206	7141	15	13-832	16-4793
Margasira.								
25, 26	23	24	21	207	6985	1	14-816	16-5601
26, 27	24	25	22	208	6828	2	15-801	16-6410
27, 28	25	26	23	209	6672	3	16-785	16-7218
28, 29	26	27	24	210	6515	4	17-769	16-8026
29, 30	27	28	25	211	6359	5	18-754	16-8835
30, 31	28	29	26	212	6202	6	19-738	16-9644
31, 1	29	30	27	213	6046	7	20-722	17-0452
Aug.								
1, 2	30	31	28	214	5889	8	21-707	17-1261
	Oct.	Nov.						
2, 3	1	1	29	215	5733	9	22-691	17-2069
3, 4	2	2	29	216	5576	10	23-675	17-2877
Sankranti. { Day of month. S. Sid. 29-8933 A. Sid. 29-9033								
" " year. " 216-8289 " 216-7958								
Kartikai.								
(Mal.) Vrischikam.								
Aug.	Oct.	Nov.	(Beng.) Margasira.	Margasira (Lunar).				
4, 5	3	3	1	217	5420	11	24-660	17-3686
5, 6	4	4	2	218	5264	12	25-644	17-4494
6, 7	5	5	3	219	5107	13	26-628	17-5303
7, 8	6	6	4	220	4951	14	0-058	17-6111
8, 9	7	7	5	221	4794	15	1-043	17-6900
9, 10	8	8	6	222	4638	1	2-027	17-7728
10, 11	9	9	7	223	4481	2	3-011	17-8537
11, 12	10	10	8	224	4325	3	3-996	17-9345
12, 13	11	11	9	225	4168	4	4-980	18-0154
13, 14	12	12	10	226	4012	5	5-964	18-0962
14, 15	13	13	11	227	3855	6	6-949	18-1771
15, 16	14	14	12	228	3699	7	7-933	18-2579
16, 17	15	15	13	229	3542	8	8-917	18-3388
17, 18	16	16	14	230	3386	9	9-902	18-4196
18, 19	17	17	15	231	3229	10	10-886	18-5005
19, 20	18	18	16	232	3073	11	11-870	18-5813
20, 21	19	19	17	233	2916	12	12-855	18-6622
21, 22	20	20	18	234	2760	13	13-839	18-7430
22, 23	21	21	19	235	2604	14	14-824	18-8239
23, 24	22	22	20	236	2447	15	15-808	18-9047
Sankranti. { Day of month. S. Sid. 29-3178 A. Sid. 29-3505								
" " year. " 275-6369 " 275-6550								
Tai.								
(Mal.) Magaram.								
	Oct.	Dec.	Jan.	(Beng.) Magha.	Magha (Lunar).			
3	2, 3	1	1	1	276	6032	11	1-057
4	3, 4	2	2	2	277	5875	12	2-041
5	4, 5	3	3	3	278	5719	13	3-026
6	5, 6	4	4	4	279	5562	14	4-010
7	6, 7	5	5	5	280	5406	15	4-995

* When two dates are given in any of these columns, use the first in a leap year; otherwise use the second.

TABLE VIII.

Week-day.	Days reckoned from			Day of Solar Month.	Day of Solar Year.	Ending moment of Tithi.	Tithi.	☾'s An. for each Tithi.	☉'s Long. for Nakshatras and Yogas.
	Jan. 1	Mar. 1	Apr. 1						
	Oct.	Dec.	Jan.	Tai.	Magha (Lunar).				
1	7, 8	6	6	6	281	·5249	1	5·979	22·5429
2	8, 9	7	7	7	282	·5093	2	6·963	22·6237
3	9, 10	8	8	8	283	·4937	3	7·948	22·7046
4	10, 11	9	9	9	284	·4780	4	8·932	22·7854
5	11, 12	10	10	10	285	·4624	5	9·916	22·8663
6	12, 13	11	11	11	286	·4467	6	10·901	22·9471
7	13, 14	12	12	12	287	·4311	7	11·885	23·0280
1	14, 15	13	13	13	288	·4154	8	12·869	23·1088
2	15, 16	14	14	14	289	·3998	9	13·854	23·1897
3	16, 17	15	15	15	290	·3841	10	14·838	23·2705
4	17, 18	16	16	16	291	·3685	11	15·822	23·3514
5	18, 19	17	17	17	292	·3528	12	16·807	23·4322
6	19, 20	18	18	18	293	·3372	13	17·791	23·5131
7	20, 21	19	19	19	294	·3215	14	18·775	23·5939
1	21, 22	20	20	20	295	·3059	15	19·760	23·6748
					Phalguna.				
2	22, 23	21	21	21	296	·2902	1	20·744	23·7556
3	23, 24	22	22	22	297	·2746	2	21·729	23·8364
4	24, 25	23	23	23	298	·2589	3	22·713	23·9173
5	25, 26	24	24	24	299	·2433	4	23·697	23·9982
6	26, 27	25	25	25	300	·2277	5	24·682	24·0790
7	27, 28	26	26	26	301	·2120	6	25·666	24·1599
1	28, 29	27	27	27	302	·1964	7	26·650	24·2407
2	29, 30	28	28	28	303	·1807	8	0·080	24·3216
3	30, 31	29	29	29	304	·1651	9	1·064	24·4024
4	31, 1	30	30	29	305	·1494	10	2·049	24·4833
Sankranti.	{ Day of month. S. Sid. 29·4480 A. Sid. 29·4567 " year. " 305·0850 " 305·1117								
	Masi.								
	(Mal.) Kumbam.								
	Nov.	Dec.	Jan.	(Beng) Phalguna.	Phalguna (Lunar).				
5	1, 2	31	31	1	306	·1338	11	3·033	24·5641
6	2, 3	1	1	2	307	·1181	12	4·017	24·6450
7	3, 4	2	2	3	308	·1025	13	5·002	24·7258
1	4, 5	3	3	4	309	·0868	14	5·986	24·8067
2	5, 6	4	4	5	310	·0712	15	6·971	24·8875
3	6, 7	5	5	6	311	·0555	1	7·955	24·9683
4	7, 8	6	6	7	312	·0399	2	8·939	25·0492
5	8, 9	7	7	8	313	·0242	3	9·924	25·1300
6	9, 10	8	8	9	314	·0086	4	10·908	25·2109
...	...	...	...	...	314	·9929	5	11·892	...
7	10, 11	9	9	10	315	·9773	6	12·877	25·2917
1	11, 12	10	10	11	316	·9617	7	13·861	25·3726
2	12, 13	11	11	12	317	·9460	8	14·845	25·4534
3	13, 14	12	12	13	318	·9304	9	15·830	25·5343
4	14, 15	13	13	14	319	·9147	10	16·814	25·6151
5	15, 16	14	14	15	320	·8991	11	17·798	25·6960
6	16, 17	15	15	16	321	·8834	12	18·783	25·7768
7	17, 18	16	16	17	322	·8678	13	19·767	25·8577
1	18, 19	17	17	18	323	·8521	14	20·751	25·9385
2	19, 20	18	18	19	324	·8365	15	21·736	26·0194
					Chaitra (when there is no Adhika masa).				
3	20, 21	19	19	20	325	·8208	1	22·720	26·1002
4	21, 22	20	20	21	326	·8052	2	23·705	26·1811
5	22, 23	21	21	22	327	·7895	3	24·689	26·2619
6	23, 24	22	22	23	328	·7739	4	25·673	26·3428
7	24, 25	23	23	24	329	·7582	5	26·658	26·4236
1	25, 26	24	24	25	330	·7426	6	0·087	26·5045
2	26, 27	25	25	26	331	·7269	7	1·072	26·5853
3	27, 28	26	26	27	332	·7113	8	2·056	26·6662
4	28, 29	27	27	28	333	·6957	9	3·040	26·7470
5	29, 30	28	28	29	334	·6800	10	4·025	26·8279
					Chaitra (when there is Adhika masa).				
6	30, 31	29	29	30	335	·6644	11	5·009	26·9087
7	31, 1	30	30	31	336	·6487	12	5·993	26·9896
1	1, 2	31	2, 3	3	337	·6331	13	6·978	27·0704
					Panguni.				
					(Mal.) Meenam.				
					(Beng.) Chaitra.	Chaitra (Lunar).			
6	30, 1	29	29, 1	1	335	·6644	11	5·009	26·9087
7	1, 2	30	1, 2	2	336	·6487	12	5·993	26·9896
1	2, 3	31	2, 3	3	337	·6331	13	6·978	27·0704
					Chaitra (when there is Adhika masa).				
2	3, 4	1	3, 4	4	338	·6174	14	7·962	27·1513
3	4, 5	2	4, 5	5	339	·6018	15	8·947	27·2321
4	5, 6	3	5, 6	6	340	·5861	1	9·931	27·3130
5	6, 7	4	6, 7	7	341	·5705	2	10·915	27·3938
6	7, 8	5	7, 8	8	342	·5548	3	11·900	27·4746
7	8, 9	6	8, 9	9	343	·5392	4	12·884	27·5555
1	9, 10	7	9, 10	10	344	·5235	5	13·868	27·6363
2	10, 11	8	10, 11	11	345	·5079	6	14·853	27·7172
3	11, 12	9	11, 12	12	346	·4922	7	15·837	27·7980
4	12, 13	10	12, 13	13	347	·4766	8	16·821	27·8789
5	13, 14	11	13, 14	14	348	·4610	9	17·806	27·9597
6	14, 15	12	14, 15	15	349	·4453	10	18·790	28·0406
7	15, 16	13	15, 16	16	350	·4297	11	19·774	28·1214
1	16, 17	14	16, 17	17	351	·4140	12	20·759	28·2023
2	17, 18	15	17, 18	18	352	·3984	13	21·743	28·2831
3	18, 19	16	18, 19	19	353	·3827	14	22·727	28·3640
4	19, 20	17	19, 20	20	354	·3671	15	23·712	28·4448
					Chaitra (when there is Adhika masa).				
5	20, 21	18	20, 21	21	355	·3514	1	24·696	28·5257
6	21, 22	19	21, 22	22	356	·3358	2	25·681	28·6066
7	22, 23	20	22, 23	23	357	·3201	3	26·665	28·6874
1	23, 24	21	23, 24	24	358	·3045	4	0·095	28·7683
2	24, 25	22	24, 25	25	359	·2888	5	1·079	28·8491
3	25, 26	23	25, 26	26	360	·2732	6	2·063	28·9300
4	26, 27	24	26, 27	27	361	·2575	7	3·048	29·0108
5	27, 28	25	27, 28	28	362	·2419	8	4·032	29·0917
6	28, 29	26	28, 29	29	363	·2262	9	5·016	29·1725
7	29, 30	27	29, 30	30	364	·2106	10	6·001	29·2533
1	30, 31	28	30, 31	30	365	·1950	11	6·985	29·3342
Sankranti.	{ Day of month. S. Sid. 30·3535 A. Sid. 30·3388 " year. " 365·2587 " 365·2587								
	Chittirai.								
	(Mal.) Medam								
	Dec.	Feb.	Mar.	(Beng.) Vaisakha.	Chaitra (Lunar).				
2	31, 1	29, 1	31, 1	1	366	·1793	12	7·969	29·4150
3	1, 2	1, 2	1, 2	2	367	·1637	13	8·954	
4	2, 3	2, 3	2, 3	3	368	·1480	14	9·938	
5	3, 4	3, 4	3, 4	4	369	·1324	15	10·923	
6	4, 5	4, 5	4, 5	5	370	·1167	1	11·907	
7	5, 6	5, 6	5, 6	6	371	·1011	2	12·891	
1	6, 7	6, 7	6, 7	7	372	·0854	3	13·876	
2	7, 8	7, 8	7, 8	8	373	·0698	4	14·860	
3	8, 9	8, 9	8, 9	9	374	·0541	5	15·844	
4	9, 10	9, 10	9, 10	10	375	·0385	6	16·829	
5	10, 10								

* When two dates are given in any of these columns, use the first in a leap year; otherwise use the second.

Moon's Anomaly and Moon's Equation of the Centre in Days and Fractions of a Day.

SURYA SIDDHANTA.

Eqn.	0	1	2	3	4	5	6	7	8	9	Eqn.	—	8	7	6	5	4	3	2	1	0
												Moon's Anomaly in days.									
00	000	011	023	034	046	057	069	080	091	102	41	—	...	...	...	...	7-275	7-570	7-677	7-785	7-874
01	114	125	137	148	160	171	183	195	206	218	40	7-938	8-002	8-066	8-130	8-176	8-222	8-268	8-314	8-360	8-407
02	229	241	252	264	275	286	297	309	320	332	39	8-443	8-479	8-515	8-552	8-588	8-623	8-659	8-694	8-724	8-754
03	343	355	366	378	389	401	413	424	436	447	38	8-784	8-813	8-842	8-871	8-900	8-929	8-959	8-985	9-011	9-035
04	458	469	481	492	504	516	527	539	550	562	37	9-060	9-085	9-109	9-134	9-159	9-184	9-208	9-233	9-256	9-278
05	573	585	597	608	619	630	642	654	665	677	36	9-299	9-321	9-343	9-365	9-387	9-409	9-430	9-452	9-474	9-495
06	689	700	712	724	735	747	759	771	782	793	35	9-517	9-536	9-555	9-575	9-594	9-613	9-632	9-652	9-671	9-690
07	805	816	828	840	851	863	875	886	898	910	34	9-709	9-728	9-747	9-766	9-785	9-804	9-821	9-838	9-855	9-873
08	921	933	945	957	968	979	991	1-003	1-015	1-027	33	9-890	9-907	9-925	9-943	9-960	9-977	9-994	10-012	10-029	10-046
09	1-038	1-050	1-062	1-074	1-086	1-098	1-109	1-121	1-132	1-144	32	10-063	10-079	10-095	10-111	10-127	10-143	10-159	10-175	10-191	10-206
10	1-156	1-168	1-179	1-191	1-203	1-215	1-227	1-239	1-251	1-263	31	10-222	10-238	10-254	10-269	10-285	10-301	10-317	10-332	10-347	10-362
11	1-275	1-287	1-299	1-310	1-322	1-334	1-346	1-358	1-370	1-382	30	10-376	10-391	10-406	10-421	10-435	10-450	10-464	10-479	10-493	10-508
12	1-394	1-406	1-418	1-430	1-442	1-454	1-466	1-478	1-490	1-502	29	10-523	10-537	10-552	10-566	10-581	10-595	10-610	10-624	10-638	10-651
13	1-514	1-526	1-538	1-550	1-562	1-574	1-587	1-599	1-611	1-624	28	10-665	10-679	10-692	10-706	10-719	10-733	10-747	10-760	10-774	10-787
14	1-636	1-648	1-660	1-672	1-684	1-697	1-709	1-721	1-734	1-746	27	10-801	10-815	10-829	10-843	10-857	10-870	10-883	10-896	10-909	10-922
15	1-758	1-771	1-783	1-795	1-808	1-820	1-832	1-844	1-856	1-868	26	10-934	10-947	10-960	10-973	10-985	10-998	11-011	11-024	11-037	11-050
16	1-881	1-893	1-906	1-919	1-931	1-944	1-957	1-969	1-982	1-994	25	11-063	11-076	11-088	11-101	11-114	11-127	11-139	11-152	11-164	11-176
17	2-007	2-020	2-032	2-044	2-057	2-069	2-082	2-094	2-107	2-120	24	11-188	11-200	11-213	11-225	11-237	11-249	11-261	11-273	11-285	11-297
18	2-132	2-145	2-157	2-170	2-183	2-196	2-209	2-222	2-234	2-247	23	11-309	11-321	11-334	11-346	11-358	11-370	11-382	11-395	11-407	11-419
19	2-260	2-273	2-286	2-299	2-312	2-325	2-338	2-351	2-364	2-377	22	11-430	11-442	11-453	11-465	11-476	11-488	11-499	11-511	11-522	11-534
20	2-390	2-403	2-415	2-427	2-440	2-453	2-466	2-479	2-493	2-506	21	11-545	11-557	11-569	11-581	11-592	11-604	11-615	11-627	11-638	11-649
21	2-520	2-533	2-546	2-559	2-573	2-587	2-600	2-614	2-627	2-640	20	11-661	11-672	11-684	11-695	11-706	11-717	11-728	11-739	11-750	11-761
22	2-653	2-667	2-680	2-694	2-707	2-721	2-734	2-748	2-761	2-775	19	11-772	11-783	11-794	11-805	11-816	11-827	11-838	11-849	11-860	11-871
23	2-788	2-802	2-816	2-829	2-843	2-857	2-871	2-885	2-900	2-914	18	11-882	11-893	11-905	11-916	11-927	11-938	11-949	11-960	11-970	11-981
24	2-928	2-942	2-956	2-970	2-984	2-998	3-012	3-026	3-039	3-053	17	11-991	12-002	12-013	12-023	12-034	12-044	12-055	12-066	12-077	12-088
25	3-067	3-081	3-095	3-110	3-124	3-139	3-154	3-169	3-183	3-198	16	12-099	12-109	12-120	12-130	12-141	12-152	12-162	12-173	12-184	12-194
26	3-213	3-228	3-242	3-256	3-271	3-286	3-300	3-315	3-330	3-345	15	12-205	12-215	12-226	12-237	12-247	12-257	12-268	12-278	12-288	12-299
27	3-359	3-374	3-389	3-404	3-419	3-434	3-450	3-466	3-481	3-496	14	12-309	12-319	12-330	12-340	12-350	12-361	12-371	12-382	12-393	12-403
28	3-512	3-527	3-543	3-558	3-574	3-590	3-605	3-621	3-636	3-652	13	12-413	12-424	12-434	12-444	12-455	12-465	12-475	12-485	12-495	12-505
29	3-668	3-683	3-699	3-714	3-730	3-746	3-763	3-779	3-796	3-812	12	12-515	12-525	12-536	12-546	12-557	12-567	12-577	12-587	12-597	12-607
30	3-829	3-846	3-862	3-879	3-895	3-912	3-928	3-945	3-961	3-977	11	12-617	12-627	12-637	12-647	12-657	12-667	12-677	12-688	12-698	12-708
31	3-993	4-010	4-027	4-044	4-062	4-080	4-098	4-115	4-133	4-151	10	12-718	12-729	12-738	12-748	12-758	12-768	12-778	12-788	12-797	12-807
32	4-169	4-186	4-204	4-221	4-239	4-256	4-274	4-292	4-310	4-328	09	12-817	12-827	12-838	12-848	12-857	12-867	12-877	12-887	12-897	12-907
33	4-347	4-366	4-385	4-405	4-424	4-443	4-462	4-481	4-500	4-519	08	12-916	12-926	12-936	12-946	12-956	12-966	12-976	12-986	12-996	13-006
34	4-538	4-558	4-577	4-596	4-615	4-636	4-657	4-678	4-699	4-720	07	13-015	13-025	13-035	13-044	13-054	13-064	13-073	13-083	13-093	13-102
35	4-741	4-762	4-783	4-803	4-824	4-845	4-866	4-888	4-909	4-930	06	13-112	13-122	13-132	13-142	13-152	13-162	13-171	13-181	13-191	13-200
36	4-954	4-977	5-001	5-025	5-048	5-072	5-096	5-119	5-142	5-166	05	13-210	13-220	13-229	13-239	13-249	13-258	13-268	13-278	13-288	13-298
37	5-189	5-213	5-238	5-265	5-291	5-318	5-345	5-372	5-398	5-425	04	13-307	13-317	13-326	13-336	13-345	13-355	13-365	13-374	13-384	13-393
38	5-452	5-478	5-504	5-532	5-564	5-595	5-626	5-658	5-689	5-721	03	13-403	13-413	13-423	13-432	13-442	13-452	13-461	13-471	13-480	13-490
39	5-752	5-784	5-815	5-852	5-890	5-927	5-965	6-003	6-040	6-078	02	13-499	13-509	13-518	13-528	13-537	13-547	13-557	13-567	13-576	13-586
40	6-116	6-165	6-213	6-261	6-309	6-357	6-405	6-471	6-537	6-603	01	13-595	13-605	13-614	13-624	13-634	13-643	13-653	13-662	13-672	13-681
41	6-669	6-759	6-868	7-077	7-275	...	...	...	...	...	00	13-691	13-701	13-710	13-720	13-730	13-739	13-749	13-758	13-768	13-777
												Maximum equation 413929 for Anomaly of 7-2752 days.									

TABLE IX—(b)—For Tithis.

SURYA SIDDHANTA.

Moon's Anomaly and Moon's Equation of the Centre in Days and Fractions of a Day.

[illegible]

Maximum equation $\cdot 413929$ for Anomaly of $20\cdot 2797$ days.

TABLE IX—(c)—For Tithis.
Sun's Anomaly expressed as Days of the Solar Year and Sun's Equation of the Centre
in Fractions of a Day.
(SURYA SIDDHANTA.)

Eqn.	9	8	7	6	5	4	3	2	1	0	Eqn.	0	1	2	3	4	5	6	7	8	9
+ Sun's Anomaly in days of the Solar Year.											Sun's Anomaly in days of the Solar Year.										
17	...	...	...	...	0.77	2.25	3.73	5.04	6.19	7.35	.00	80.55	80.87	81.19	81.51	81.83	82.15	82.47	82.79	83.11	83.43
16	8.45	9.40	10.35	11.30	12.22	13.02	13.82	14.63	15.43	16.19	.04	83.74	84.05	84.37	84.70	85.02	85.34	85.66	85.99	86.31	86.63
15	16.89	17.60	18.31	19.02	19.72	20.34	20.97	21.60	22.22	22.85	.02	86.94	87.26	87.59	87.91	88.23	88.56	88.88	89.21	89.53	89.86
14	23.47	24.04	24.60	25.17	25.74	26.31	26.88	27.43	27.96	28.48	.03	90.18	90.50	90.83	91.15	91.48	91.81	92.13	92.46	92.80	93.13
13	28.99	29.51	30.03	30.55	31.07	31.56	32.04	32.52	33.00	33.48	.04	93.45	93.78	94.11	94.44	94.77	95.10	95.43	95.76	96.10	96.44
12	33.96	34.44	34.92	35.37	35.82	36.28	36.73	37.18	37.63	38.08	.05	96.77	97.11	97.45	97.79	98.13	98.47	98.81	99.14	99.48	99.83
11	38.53	38.96	39.39	39.81	40.24	40.66	41.09	41.51	41.94	42.36	.06	100.17	100.51	100.86	101.21	101.56	101.90	102.25	102.60	102.95	103.29
10	42.76	43.16	43.57	43.97	44.37	44.78	45.18	45.58	45.99	46.39	.07	103.64	103.99	104.35	104.71	105.07	105.42	105.78	106.14	106.49	106.85
09	46.76	47.15	47.53	47.92	48.30	48.69	49.07	49.46	49.84	50.22	.08	107.20	107.57	107.94	108.30	108.67	109.04	109.41	109.78	110.15	110.52
08	50.58	50.95	51.32	51.69	52.05	52.42	52.79	53.16	53.53	53.90	.09	110.88	111.26	111.64	112.03	112.41	112.80	113.18	113.57	113.95	114.33
07	54.25	54.60	54.96	55.32	55.67	56.03	56.39	56.75	57.10	57.46	.10	114.71	115.11	115.51	115.92	116.32	116.72	117.13	117.53	117.93	118.34
06	57.80	58.15	58.50	58.85	59.19	59.54	59.89	60.24	60.58	60.93	.11	118.74	119.16	119.59	120.01	120.44	120.86	121.29	121.71	122.14	122.57
05	61.27	61.61	61.95	62.29	62.63	62.97	63.31	63.65	63.99	64.33	.12	123.01	123.46	123.92	124.37	124.82	125.27	125.73	126.18	126.66	127.14
04	64.65	64.99	65.33	65.66	65.99	66.33	66.66	66.99	67.32	67.65	.13	127.61	128.09	128.58	129.06	129.54	130.02	130.55	131.07	131.59	132.11
03	67.97	68.30	68.63	68.96	69.29	69.62	69.94	70.27	70.60	70.92	.14	132.62	133.14	133.66	134.22	134.79	135.35	135.92	136.49	137.06	137.63
02	71.24	71.56	71.89	72.21	72.54	72.87	73.19	73.51	73.83	74.16	.15	138.25	138.87	139.50	140.13	140.75	141.38	142.08	142.79	143.50	144.21
01	74.47	74.79	75.11	75.43	75.76	76.08	76.40	76.72	77.04	77.36	.16	144.91	145.67	146.47	147.27	148.08	148.88	149.80	150.75	151.70	152.65
00	77.67	77.99	78.31	78.63	78.95	79.27	79.59	79.91	80.23	80.55	.17	153.75	154.90	156.06	157.37	158.85	160.33	162.31	164.41	167.82	...
Maximum equation 178436 for Anomaly of 171.864 days.																					
+ Sun's Anomaly in days of the Solar Year.											Sun's Anomaly in days of the Solar Year.										
17	...	175.92	179.33	181.42	183.41	184.89	186.36	187.67	188.83	189.98	.00	263.18	263.50	263.81	264.13	264.45	264.77	265.08	265.40	265.72	266.04
16	191.09	192.04	192.99	193.94	194.86	195.66	196.46	197.26	198.06	198.82	.01	266.37	266.68	267.00	267.32	267.64	267.96	268.28	268.60	268.92	269.23
15	199.54	200.24	200.95	201.66	202.36	202.98	203.61	204.23	204.86	205.48	.02	269.57	269.89	270.21	270.53	270.85	271.18	271.50	271.82	272.15	272.47
14	206.11	206.68	207.25	207.81	208.38	208.95	209.52	210.07	210.59	211.11	.03	272.81	273.13	273.45	273.78	274.10	274.43	274.75	275.08	275.41	275.74
13	211.64	212.16	212.67	213.19	213.71	214.19	214.67	215.15	215.63	216.11	.04	276.08	276.41	276.74	277.06	277.39	277.72	278.05	278.38	278.72	279.05
12	216.60	217.08	217.56	218.01	218.46	218.91	219.36	219.81	220.26	220.71	.05	279.40	279.74	280.08	280.41	280.75	281.09	281.42	281.76	282.10	282.44
11	221.18	221.61	222.03	222.45	222.88	223.30	223.72	224.14	224.57	224.99	.06	282.80	283.14	283.49	283.83	284.18	284.52	284.87	285.21	285.56	285.91
10	225.41	225.81	226.21	226.61	227.01	227.42	227.82	228.22	228.62	229.02	.07	286.27	286.62	286.98	287.33	287.69	288.04	288.40	288.75	289.11	289.46
09	229.41	229.79	230.18	230.56	230.94	231.32	231.71	232.09	232.47	232.85	.08	289.83	290.20	290.56	290.93	291.30	291.66	292.03	292.40	292.76	293.13
08	233.23	233.59	233.96	234.33	234.69	235.06	235.43	235.80	236.16	236.53	.09	293.51	293.88	294.27	294.65	295.03	295.42	295.80	296.18	296.56	296.95
07	236.89	237.25	237.60	237.96	238.31	238.67	239.02	239.38	239.73	240.09	.10	297.34	297.74	298.14	298.54	298.94	299.34	299.74	300.15	300.55	300.95
06	240.45	240.80	241.14	241.49	241.83	242.18	242.52	242.87	243.22	243.56	.11	301.37	301.79	302.21	302.64	303.06	303.48	303.90	304.33	304.75	305.18
05	243.92	244.26	244.60	244.93	245.27	245.61	245.94	246.28	246.62	246.96	.12	305.64	306.09	306.54	306.99	307.44	307.89	308.34	308.79	309.27	309.75
04	247.30	247.64	247.98	248.31	248.63	248.96	249.29	249.62	249.95	250.28	.13	310.24	310.72	311.20	311.68	312.16	312.64	313.16	313.68	314.20	314.72
03	250.62	250.95	251.28	251.61	251.93	252.26	252.58	252.90	253.23	253.55	.14	315.25	315.77	316.29	316.84	317.41	317.98	318.54	319.11	319.68	320.24
02	253.88	254.21	254.53	254.86	255.18	255.50	255.82	256.15	256.47	256.79	.15	320.88	321.50	322.13	322.75	323.37	324.00	324.70	325.41	326.11	326.82
01	257.12	257.44	257.76	258.08	258.40	258.72	259.04	259.36	259.67	259.99	.16	327.54	328.29	329.10	329.90	330.70	331.50	332.42	333.37	334.31	335.26
00	260.32	260.64	260.95	261.27	261.59	261.91	262.23	262.54	262.86	263.18	.17	336.38	337.53	338.68	339.99	341.47	342.95	344.93	347.03	350.44	...
Maximum equation 178436 for Anomaly of 354.493 days.																					
+ Sun's Anomaly in days of the Solar Year.											Sun's Anomaly in days of the Solar Year.										
17	...	363.87	364.21	364.55	364.89	365.23	365.57	365.91	366.25	366.59	.00	369.99	370.33	370.67	371.01	371.35	371.69	372.03	372.37	372.71	373.05
16	370.71	371.05	371.39	371.73	372.07	372.41	372.75	373.09	373.43	373.77	.01	375.11	375.45	375.79	376.13	376.47	376.81	377.15	377.49	377.83	378.17
15	371.43	371.77	372.11	372.45	372.79	373.13	373.47	373.81	374.15	374.49	.02	378.23	378.57	378.91	379.25	379.59	379.93	380.27	380.61	380.95	381.29
14	372.15	372.49	372.83	373.17	373.51	373.85	374.19	374.53	374.87	375.21	.03	381.33	381.67	382.01	382.35	382.69	383.03	383.37	383.71	384.05	384.39
13	372.87	373.21	373.55	373.89	374.23	374.57	374.91	375.25	375.59	375.93	.04	384.43	384.77	385.11	385.45	385.79	386.13	386.47	386.81	387.15	387.49
12	373.59	373.93	374.27	374.61	374.95	375.29	375.63	375.97	376.31	376.65	.05	387.53	387.87	388.21	388.55	388.89	389.23	389.57	389.91	390.25	390.59
11	374.31	374.65	374.99																		

TABLE IX—(d)—For Tithis.

Moon's Anomaly and Equation of the Centre expressed in Days and Fractions of a Day.

(ARYA SIDDHANTA.)

[illegible]

ARYA SIDDHANTA.

Moon's Anomaly and Equation of the Centre expressed in days and fractions of a day.

[illegible]

Maximum equation **41171** for Anomaly of 20-2817 days.

TABLE IX—(f)—For Tithis.

Sun's Anomaly and Equation of the Centre expressed in days and fractions of a day.

ARYA SIDDHANTA.

Eqn.	9	8	7	6	5	4	3	2	1	0	Eqn.	0	1	2	3	4	5	6	7	8	9
+ Sun's Anomaly in days of the solar year.											Sun's Anomaly in days of the solar year.										
.17	...	...	...	...	...	...	1.14	2.66	4.11	5.48	.00	81.29	81.62	81.95	82.28	82.61	82.94	83.27	83.60	83.93	84.27
.16	6.62	7.76	8.91	9.33	10.80	11.74	12.68	13.49	14.29	15.09	.01	84.59	84.92	85.25	85.58	85.91	86.25	86.58	86.91	87.24	87.58
.15	15.88	16.68	17.38	18.08	18.77	19.47	20.17	20.82	21.45	22.08	.02	87.90	88.23	88.56	88.89	89.22	89.56	89.89	90.23	90.57	90.90
.14	22.69	23.32	23.95	24.54	25.11	25.67	26.24	26.81	27.37	27.94	.03	91.23	91.56	91.90	92.24	92.57	92.92	93.26	93.60	93.94	94.28
.13	28.49	28.98	29.50	30.02	30.54	31.06	31.57	32.07	32.56	33.04	.04	94.61	94.95	95.28	95.62	95.96	96.30	96.64	96.99	97.34	97.68
.12	33.52	34.00	34.48	34.97	35.45	35.91	36.37	36.82	37.27	37.73	.05	98.02	98.36	98.71	99.06	99.40	99.75	100.09	100.44	100.80	101.20
.11	38.17	38.62	39.08	39.53	39.95	40.38	40.81	41.23	41.66	42.09	.06	101.49	101.85	102.20	102.56	102.91	103.26	103.62	103.97	104.33	104.69
.10	42.51	42.93	43.35	43.76	44.16	44.57	44.98	45.38	45.79	46.20	.07	105.05	105.41	105.77	106.14	106.50	106.86	107.23	107.59	107.95	108.33
.09	46.59	47.00	47.39	47.78	48.17	48.56	48.95	49.34	49.73	50.12	.08	108.69	109.07	109.44	109.81	110.19	110.56	110.93	111.31	111.68	112.07
.08	50.50	50.89	51.27	51.64	52.01	52.39	52.76	53.13	53.51	53.88	.09	112.45	112.84	113.23	113.62	114.01	114.40	114.79	115.18	115.58	115.98
.07	54.24	54.62	54.98	55.35	55.71	56.07	56.44	56.80	57.16	57.53	.10	116.38	116.78	117.19	117.60	118.00	118.41	118.81	119.22	119.64	120.07
.06	57.88	58.24	58.60	58.95	59.31	59.66	60.02	60.37	60.72	61.08	.11	120.48	120.91	121.34	121.77	122.19	122.62	123.05	123.49	123.95	124.40
.05	61.42	61.78	62.13	62.48	62.83	63.17	63.52	63.86	64.21	64.56	.12	124.85	125.30	125.75	126.21	126.66	127.12	127.61	128.09	128.57	129.06
.04	64.89	65.24	65.58	65.93	66.27	66.61	66.95	67.29	67.63	67.97	.13	129.53	130.01	130.50	131.00	131.52	132.04	132.53	133.08	133.60	134.12
.03	68.30	68.63	68.97	69.31	69.65	70.00	70.34	70.67	71.01	71.34	.14	134.63	135.20	135.77	136.33	136.90	137.47	138.03	138.63	139.25	139.88
.02	71.67	72.00	72.34	72.68	73.02	73.35	73.68	74.01	74.34	74.68	.15	140.50	141.12	141.75	142.40	143.10	143.80	144.50	145.20	145.90	146.70
.01	75.00	75.33	75.66	76.00	76.33	76.66	76.99	77.32	77.66	77.99	.16	147.49	148.29	149.09	149.89	150.83	151.77	152.71	153.66	154.81	155.95
.00	78.31	78.64	78.97	79.30	79.63	79.96	80.29	80.62	80.96	81.29	.17	157.09	158.46	159.91	161.44	163.45	165.77	169.77	...	...	...

Maximum equation .176272 for Anomaly of 172.601 days.

Eqn.	9	8	7	6	5	4	3	2	1	0	Eqn.	0	1	2	3	4	5	6	7	8	9
+ Sun's Anomaly in days of the solar year.											Sun's Anomaly in days of the solar year.										
.17	...	...	...	...	...	...	1.14	2.66	4.11	5.48	.00	81.29	81.62	81.95	82.28	82.61	82.94	83.27	83.60	83.93	84.27
.16	189.27	190.31	191.55	192.50	193.44	194.38	195.28	196.12	196.88	197.72	.01	267.22	267.54	267.87	268.20	268.54	268.87	269.20	269.53	269.86	270.19
.15	198.53	199.32	200.02	200.72	201.41	202.11	202.81	203.46	204.08	204.71	.02	270.53	270.86	271.19	271.52	271.84	272.18	272.51	272.85	273.18	273.51
.14	205.34	205.97	206.59	207.18	207.75	208.31	208.88	209.44	210.01	210.57	.03	273.86	274.19	274.53	274.86	275.20	275.54	275.88	276.22	276.55	276.89
.13	211.11	211.62	212.14	212.66	213.18	213.69	214.21	214.71	215.19	215.67	.04	277.24	277.57	277.91	278.25	278.58	278.92	279.26	279.61	279.95	280.29
.12	216.16	216.65	217.13	217.61	218.09	218.55	219.00	219.45	219.91	220.36	.05	280.65	280.99	281.34	281.68	282.02	282.37	282.71	283.06	283.41	283.76
.11	220.82	221.27	221.72	222.17	222.59	223.02	223.44	223.87	224.29	224.72	.06	284.12	284.48	284.83	285.18	285.53	285.88	286.24	286.59	286.95	287.31
.10	225.15	225.58	226.00	226.40	226.80	227.21	227.61	228.12	228.42	228.83	.07	287.68	288.04	288.40	288.76	289.12	289.48	289.85	290.21	290.57	290.97
.09	229.24	229.64	230.03	230.42	230.81	231.20	231.59	231.98	232.37	232.75	.08	291.32	291.69	292.07	292.44	292.81	293.18	293.55	293.92	294.30	294.68
.08	233.15	233.54	233.91	234.28	234.65	235.02	235.40	235.77	236.14	236.51	.09	295.08	295.47	295.86	296.24	296.63	297.02	297.41	297.80	298.19	298.66
.07	236.89	237.26	237.63	237.99	238.35	238.71	239.07	239.43	239.79	240.16	.10	299.01	299.41	299.82	300.22	300.62	301.03	301.43	301.84	302.25	302.68
.06	240.53	240.89	241.24	241.60	241.95	242.30	242.65	243.00	243.36	243.71	.11	303.11	303.54	303.96	304.39	304.81	305.24	305.66	306.11	306.56	307.01
.05	244.07	244.42	244.77	245.12	245.47	245.81	246.15	246.50	246.84	247.19	.12	307.48	307.93	308.38	308.83	309.28	309.74	310.22	310.71	311.19	311.67
.04	247.54	247.88	248.23	248.57	248.91	249.25	249.59	249.92	250.26	250.60	.13	312.16	312.64	313.12	313.62	314.14	314.72	315.18	315.69	316.21	316.73
.03	250.94	251.28	251.62	251.95	252.29	252.64	252.97	253.31	253.64	253.97	.14	317.26	317.83	318.39	318.96	319.52	320.09	320.65	321.24	321.87	322.49
.02	254.32	254.65	254.99	255.32	255.66	255.99	256.32	256.65	256.98	257.31	.15	323.13	323.75	324.37	325.02	325.72	326.42	327.12	327.81	328.51	329.31
.01	257.65	257.96	258.31	258.64	258.97	259.30	259.63	259.96	260.29	260.62	.16	330.12	330.91	331.71	332.52	333.45	334.39	335.33	336.28	337.42	338.57
.00	260.96	261.28	261.61	261.94	262.27	262.60	262.93	263.26	263.59	263.92	.17	339.72	341.09	342.54	344.06	346.07	348.39	352.39	...	...	...

Maximum equation .176272 for Anomaly of 355.231 days.

TABLE IX—(g)—For Tithis.

Moon's Anomaly and Moon's Equation of the Centre in Days, Ghatikas and Palas.

SURYA SIDDHANTA.

Eqn.							Eqn.						
Palas. —							+ 0						
0	10	20	30	40	50		0	10	20	30	40	50	
Ghat. d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.		Ghat. d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	
0	...	1 50	3 50	5 50	7 35		0	13 46 40	13 48 10	13 49 50	13 51 30	13 53 5	13 54 45
1	11 25	13 15	15 15	17 15	19 5		1	13 56 15	13 57 45	13 59 25	14 1 5	14 2 35	14 4 15
2	22 50	24 50	26 40	28 40	30 30		2	14 5 50	14 7 30	14 9 0	14 10 40	14 12 10	14 13 50
3	34 20	36 15	38 15	40 5	42 5		3	14 15 20	14 17 5	14 18 45	14 20 15	14 21 55	14 23 35
4	46 5	47 55	49 55	51 50	53 50		4	14 25 15	14 26 55	14 28 30	14 30 10	14 31 40	14 33 20
5	57 40	59 30	1 1 30	1 3 30	1 5 15		5	14 35 0	14 36 30	14 38 10	14 39 50	14 41 25	14 43 15
6	1 9 25	1 11 25	1 13 15	1 15 15	1 17 15		6	14 44 55	14 46 35	14 48 5	14 49 45	14 51 25	14 53 5
7	1 21 10	1 23 10	1 25 10	1 27 10	1 29 20		7	14 54 50	14 56 30	14 58 10	14 59 50	15 1 40	15 3 15
8	1 33 10	1 35 15	1 37 15	1 39 25	1 41 25		8	15 4 50	15 6 45	15 8 25	15 10 15	15 11 55	15 13 35
9	1 45 25	1 47 35	1 49 35	1 51 30	1 53 40		9	15 15 15	15 17 15	15 18 45	15 20 30	15 22 20	15 24 10
10	1 58 0	2 0 10	2 2 0	2 4 10	2 6 5		10	15 26 0	15 27 50	15 29 20	15 31 10	15 32 55	15 34 45
11	2 10 15	2 12 35	2 14 45	2 16 55	2 19 5		11	15 36 25	15 38 25	15 40 15	15 42 5	15 43 55	15 45 45
12	2 23 20	2 25 30	2 27 30	2 29 50	2 32 0		12	15 47 40	15 49 30	15 51 10	15 53 10	15 55 0	15 57 0
13	2 36 40	2 38 45	2 40 55	2 43 15	2 45 35		13	15 59 0	16 0 55	16 2 45	16 4 40	16 6 35	16 8 30
14	2 50 5	2 52 25	2 54 45	2 57 0	2 59 20		14	16 10 35	16 12 35	16 14 40	16 16 40	16 18 40	16 20 40
15	3 4 0	3 6 30	3 8 50	3 11 20	3 13 45		15	16 22 40	16 24 50	16 26 50	16 29 0	16 31 15	16 33 25
16	3 18 35	3 21 5	3 23 35	3 26 5	3 28 35		16	16 35 25	16 37 35	16 39 45	16 41 55	16 44 5	16 46 30
17	3 33 40	3 36 20	3 39 0	3 41 40	3 44 10		17	16 48 40	16 51 0	16 53 20	16 55 40	16 57 50	17 0 20
18	3 49 50	3 52 25	3 55 5	3 57 55	4 0 45		18	17 2 50	17 5 15	17 7 35	17 10 5	17 12 35	17 15 25
19	4 6 35	4 9 35	4 12 20	4 15 20	4 18 20		19	17 17 45	17 20 25	17 23 0	17 25 40	17 28 20	17 31 0
20	4 24 40	4 27 50	4 31 0	4 34 20	4 37 25		20	17 34 0	17 36 50	17 39 40	17 42 40	17 45 35	17 48 45
21	4 44 25	4 47 55	4 51 25	4 54 55	4 58 45		21	17 51 55	17 55 5	17 58 15	18 1 25	18 4 55	18 8 40
22	5 6 40	5 10 30	5 14 40	5 19 0	5 23 30		22	18 12 20	18 15 50	18 19 40	18 23 40	18 27 50	18 32 0
23	5 32 30	5 37 45	5 43 5	5 48 15	5 54 15		23	18 36 10	18 41 15	18 46 15	18 51 5	18 56 45	19 2 45
24	6 6 55	6 15 5	6 22 50	6 33 20	6 46 10		24	19 8 45	19 16 35	19 24 10	19 34 20	19 46 50	20 16 50

Maximum equation 24 ghatikas 50 palas for Anomaly of 7 days 16 ghatikas 31 palas.

Maximum equation 24 ghatikas 50 palas for Anomaly of 20 days 16 ghatikas 47 palas.

Eqn.							Eqn.						
Palas. —							+ 50						
50	40	30	20	10	0		50	40	30	20	10	0	
Ghat. d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.		Ghat. d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	
24	7 16 30	7 46 30	7 59 0	8 9 10	8 16 45		24	20 16 50	20 47 10	21 0 0	21 10 30	21 18 15	21 26 25
23	8 30 35	8 36 35	8 42 15	8 47 5	8 52 5		23	21 32 45	21 39 5	21 45 5	21 50 15	21 55 35	22 0 50
22	9 1 20	9 5 30	9 9 40	9 13 40	9 17 30		22	22 5 20	22 9 50	22 14 20	22 18 40	22 22 50	22 26 40
21	9 24 40	9 28 25	9 31 55	9 35 5	9 38 15		21	22 30 40	22 34 35	22 38 35	22 41 55	22 45 25	22 48 55
20	9 44 35	9 47 45	9 50 40	9 53 40	9 56 30		20	22 52 25	22 55 55	22 59 0	23 2 20	23 5 30	23 8 40
19	10 2 20	10 5 0	10 7 40	10 10 20	10 12 55		19	23 12 0	23 15 0	23 18 0	23 21 0	23 23 45	23 26 45
18	10 17 55	10 20 45	10 23 15	10 25 45	10 28 5		18	23 29 45	23 32 35	23 35 25	23 38 15	23 40 55	23 43 30
17	10 33 0	10 35 30	10 37 40	10 40 0	10 42 20		17	23 46 20	23 49 10	23 51 40	23 54 20	23 57 0	23 59 40
16	10 46 50	10 49 15	10 51 25	10 53 35	10 55 45		16	24 2 10	24 4 45	24 7 15	24 9 45	24 12 15	24 14 45
15	10 59 55	11 2 5	11 4 20	11 6 30	11 8 30		15	24 17 5	24 19 35	24 22 0	24 24 30	24 26 50	24 29 20
14	11 12 40	11 14 40	11 16 40	11 18 45	11 20 45		14	24 31 40	24 34 0	24 36 20	24 38 35	24 40 55	24 43 15
13	11 24 55	11 26 35	11 28 35	11 30 35	11 32 25		13	24 45 45	24 47 45	24 50 5	24 52 25	24 54 35	24 56 40
12	11 36 20	11 38 20	11 40 10	11 42 10	11 43 50		12	24 59 0	25 1 20	25 3 30	25 5 50	25 7 50	25 10 0
11	11 47 35	11 49 25	11 51 15	11 53 5	11 54 55		11	25 12 5	25 14 15	25 16 25	25 18 35	25 20 45	25 23 5
10	11 58 35	12 0 25	12 2 10	12 4 0	12 5 20		10	25 25 5	25 27 15	25 29 10	25 31 20	25 33 10	25 35 20
9	12 9 10	12 11 0	12 12 50	12 14 35	12 16 15		9	25 37 30	25 39 40	25 41 50	25 43 45	25 45 45	25 47 55
8	12 19 45	12 21 25	12 23 5	12 24 55	12 26 35		8	25 49 55	25 51 55	25 53 55	25 56 5	25 58 5	26 0 10
7	12 30 10	12 31 40	12 33 30	12 35 10	12 36 50		7	26 2 10	26 4 0	26 6 10	26 8 10	26 10 10	26 12 10
6	12 40 15	12 41 55	12 43 35	12 45 15	12 46 45		6	26 14 5	26 16 5	26 18 5	26 20 5	26 21 55	26 23 55
5	12 50 5	12 51 55	12 53 30	12 55 10	12 56 50		5	26 25 55	26 28 5	26 29 50	26 31 50	26 33 50	26 35 40
4	13 0 0	13 1 40	13 3 10	13 4 55	13 6 35		4	26 37 40	26 39 40	26 41 30	26 43 25	26 45 25	26 47 15
3	13 9 45	13 11 25	13 13 5	13 14 35	13 16 15		3	26 49 15	26 51 15	26 53 15	26 55 5	26 57 5	26 59 0
2	13 19 30	13 21 10	13 22 40	13 24 20	13 25 50		2	27 0 50	27 2 50	27 4 40	27 6 40	27 8 30	27 10 30
1	13 29 5	13 30 45	13 32 15	13 33 55	13 35 35		1	27 12 15	27 14 15	27 16 15	27 18 5	27 20 5	27 21 55
0	13 38 35	13 40 15	13 41 50	13 43 30	13 45 10		0	27 23 55	27 25 45	27 27 35	27 29 30	27 31 30	27 33 20

TABLE IX—(h)—For Tithis.
Sun's Anomaly and Equation. Surya Siddhanta.

Palas.	Eqn. +	50			40			30			20			10			0		
		d.	g.	p.	d.	g.	p.	d.	g.	p.	d.	g.	p.	d.	g.	p.	d.	g.	p.
Ghatikas.	10	...			359	13	0	0	46	30	4	47	0	8	1	10	10	38	50
"	9	13	6	20	15	21	0	17	23	50	19	22	30	21	6	10	22	51	0
"	8	24	29	50	26	5	0	27	36	10	29	3	0	30	30	20	31	54	10
"	7	33	14	30	34	32	50	35	49	30	37	5	30	38	21	30	39	31	0
"	6	40	42	50	41	54	0	43	2	50	44	10	30	45	15	50	46	23	20
"	5	47	27	30	48	32	0	49	34	20	50	37	40	51	39	20	52	41	0
"	4	53	43	10	54	40	40	55	40	30	56	41	0	57	40	10	58	37	0
"	3	59	35	0	60	33	0	61	31	10	62	28	30	63	23	30	64	19	50
"	2	65	16	0	66	12	20	67	5	30	68	0	30	68	56	10	69	50	40
"	1	70	45	40	71	38	20	72	32	40	73	27	10	74	21	0	75	13	0
"	0	76	6	50	77	0	40	77	53	50	78	48	20	79	39	10	80	33	0

Palas.	Eqn. —	0			10			20			30			40			50		
		d.	g.	p.	d.	g.	p.	d.	g.	p.	d.	g.	p.	d.	g.	p.	d.	g.	p.
Ghatikas.	0	80	33	0	81	26	50	82	17	40	83	12	10	84	4	40	84	59	10
"	1	85	56	40	86	45	0	87	38	50	88	33	30	89	27	40	90	20	20
"	2	91	14	50	92	9	10	93	5	30	94	0	30	94	53	40	95	49	20
"	3	96	46	10	97	42	30	98	37	30	99	34	20	100	32	20	101	31	0
"	4	102	29	0	103	25	10	104	25	0	105	24	50	106	25	20	107	22	50
"	5	108	24	20	109	26	40	110	28	20	111	31	40	112	34	0	113	38	30
"	6	114	42	40	115	49	40	116	54	50	118	2	30	119	12	0	120	23	10
"	7	121	35	0	122	44	30	124	0	30	125	15	50	126	33	10	127	51	0
"	8	129	11	50	130	35	40	132	3	0	133	29	50	135	1	0	136	35	30
"	9	138	15	0	139	59	50	141	43	30	143	42	10	145	45	0	147	59	10
"	10	150	27	10	153	4	50	156	19	0	160	19	30	167	8	0	...		

Maximum equation—10 ghatikas 42 palas for Anomaly of 171 days 51 ghatikas 50 palas.

Palas.	Eqn. —	50			40			30			20			10			0		
		d.	g.	p.	d.	g.	p.	d.	g.	p.	d.	g.	p.	d.	g.	p.	d.	g.	p.
Ghatikas.	10	...			176	35	30	183	24	20	187	24	30	190	38	30	193	16	20
"	9	195	44	10	197	58	40	200	1	20	202	0	20	203	43	40	205	28	50
"	8	207	8	0	208	43	0	210	13	40	211	40	50	213	8	0	214	21	40
"	7	215	52	10	217	10	20	218	27	20	219	43	0	220	59	30	222	8	40
"	6	223	20	10	224	31	40	225	40	50	226	48	20	227	53	50	229	1	10
"	5	230	5	30	231	9	20	232	11	50	233	15	0	234	17	0	235	19	0
"	4	236	21	0	237	18	10	238	18	20	239	18	30	240	18	0	241	14	40
"	3	242	12	20	243	11	20	244	9	10	245	6	20	246	1	0	246	57	40
"	2	247	54	10	248	49	30	249	43	10	250	38	30	251	34	30	252	28	40
"	1	253	23	20	254	15	40	255	10	30	256	5	20	256	58	50	257	51	50
"	0	258	44	50	259	38	20	260	31	50	261	26	0	262	16	40	263	10	40

Palas.	Eqn. +	0			10			20			30			40			50		
		d.	g.	p.	d.	g.	p.	d.	g.	p.	d.	g.	p.	d.	g.	p.	d.	g.	p.
Ghatikas.	0	263	10	40	264	4	20	264	55	30	265	49	40	266	42	40	267	36	50
"	1	268	30	20	269	22	50	270	16	20	271	11	10	272	5	20	272	58	10
"	2	273	53	0	274	47	10	275	43	10	276	38	30	277	31	30	278	27	30
"	3	279	24	0	280	20	30	281	15	20	282	12	30	283	10	20	284	8	40
"	4	285	7	0	286	3	30	287	3	10	288	2	40	289	2	50	290	2	40
"	5	291	2	40	292	4	30	293	6	0	294	9	10	295	11	40	296	16	0
"	6	297	20	20	298	26	50	299	32	40	300	40	40	301	49	50	303	1	30
"	7	304	12	20	305	22	10	306	38	0	307	53	40	309	10	40	310	28	50
"	8	311	49	20	313	13	0	314	40	40	316	7	50	317	38	40	319	13	40
"	9	320	52	50	322	38	0	324	21	20	326	19	40	328	22	20	330	37	30
"	10	333	5	10	335	42	30	338	56	30	342	57	20	349	46	0	...		

Maximum equation + 10 ghatikas 42 palas for Anomaly of 354 days 29 ghatikas 36 palas.

TABLE IX—(i)—For Yogas.

Sun's Anomaly and Equation. Surya Siddhanta.

The Sun's anomaly in this table is expressed in days of the Indian Solar year.

Ghatikas.	Eqn. —	50 palas.		40 palas.		30 palas.		20 palas.		10 palas.		0 pala.	
		d.	g.	d.	g.	d.	g.	d.	g.	d.	g.	d.	g.
Ghatikas.	9	...	...	...	...	...	...	...	...	359	54	1	59
"	8	6	3	9	37	12	23	15	7	17	35	19	43
"	7	21	48	23	50	25	36	27	26	29	11	30	47
"	6	32	26	33	54	35	25	36	57	38	21	39	45
"	5	41	11	42	28	43	51	45	2	46	23	47	33
"	4	48	51	50	5	51	13	52	28	53	36	54	46
"	3	55	59	57	5	58	14	59	23	60	27	61	37
"	2	62	44	63	46	64	54	65	54	67	0	68	6
"	1	69	7	70	12	71	17	72	14	73	22	74	21
"	0	75	23	76	23	77	27	78	32	79	29	80	33

Ghatikas.	Eqn. +	0 pala.		10 palas.		20 palas.		30 palas.		40 palas.		50 palas.	
		d.	g.	d.	g.	d.	g.	d.	g.	d.	g.	d.	g.
Ghatikas.	0	80	33	81	37	82	35	83	38	84	44	85	45
"	1	86	45	87	44	88	49	89	48	90	54	91	58
"	2	92	59	94	5	95	10	96	12	97	20	98	26
"	3	99	27	100	38	101	43	102	51	104	1	105	7
"	4	106	19	107	29	108	37	109	51	111	0	112	15
"	5	113	25	114	43	116	3	117	15	118	35	120	2
"	6	121	21	122	44	124	8	125	39	127	12	128	39
"	7	130	19	132	3	133	39	135	29	137	15	139	18
"	8	141	22	143	30	145	58	148	43	151	30	155	1
"	9	159	7	166	27	...	...	...	...	...	...	...	...

Maximum equation + 9 ghatikas 13 palas for Anomaly of 171 days 52 ghatikas.

Ghatikas.	Eqn. +	50 palas.		40 palas.		30 palas.		20 palas.		10 palas.		0 pala.	
		d.	g.	d.	g.	d.	g.	d.	g.	d.	g.	d.	g.
Ghatikas.	9	...	...	...	...	...	...	...	...	177	16	184	36
"	8	188	42	192	13	195	0	197	45	200	13	202	21
"	7	204	25	206	27	208	14	210	5	211	41	213	25
"	6	215	3	216	31	218	4	219	35	220	59	222	22
"	5	223	42	225	5	226	28	227	41	229	1	230	18
"	4	231	28	232	42	233	52	235	7	236	15	237	24
"	3	238	36	239	42	240	52	242	0	243	5	244	15
"	2	245	17	246	24	247	31	248	32	249	38	250	44
"	1	251	45	252	50	253	54	254	53	255	59	256	59
"	0	253	2	259	0	260	5	261	9	262	7	263	11

Ghatikas.	Eqn. —	0 pala.		10 palas.		20 palas.		30 palas.		40 palas.		50 palas.	
		d.	g.	d.	g.	d.	g.	d.	g.	d.	g.	d.	g.
Ghatikas.	0	263	11	264	14	265	11	266	15	267	20	268	19
"	1	269	23	270	21	271	27	272	26	273	31	274	36
"	2	275	37	276	43	277	48	278	50	279	58	281	4
"	3	282	7	283	16	284	20	285	30	286	39	287	45
"	4	288	57	290	9	291	14	292	29	293	37	294	51
"	5	296	2	297	20	298	39	299	52	301	14	302	39
"	6	303	59	305	22	306	46	308	16	309	49	311	17
"	7	312	56	314	42	316	16	318	6	319	53	321	55
"	8	324	1	326	8	328	35	331	21	334	8	337	38
"	9	341	44	349	4	...	...	...	...	...	...	...	...

Maximum equation - 9 ghatikas 13 palas for Anomaly of 354 days 30 ghatikas.

TABLE IX—(i)—For Yogas.

Moon's Anomaly and Equation of the Centre in Days, Ghatikas and Palas.
SURYA SIDDHANTA.

Eqn.	0	10	20	30	40	50	Eqn.	0	10	20	30	40	50
Palas. —							+						
Ghat. d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	Ghat. d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.
0	...	0 2 12	0 4 25	0 6 37	0 8 49	0 11 2	0	13 46 38	13 48 29	13 50 20	13 52 11	13 54 2	13 55 53
1	0 13 14	0 15 26	0 17 38	0 19 51	0 22 5	0 24 19	1	13 57 44	13 59 35	14 1 26	14 3 15	14 5 7	14 6 59
2	0 26 33	0 28 46	0 31 0	0 33 14	0 35 28	0 37 42	2	14 8 51	14 10 43	14 12 35	14 14 27	14 16 19	14 18 12
3	0 39 58	0 42 13	0 44 29	0 46 44	0 49 0	0 51 16	3	14 20 6	14 22 0	14 23 54	14 25 48	14 27 42	14 29 36
4	0 53 32	0 55 47	0 58 3	1 0 20	1 2 37	1 4 54	4	14 31 30	14 33 24	14 35 17	14 37 12	14 39 7	14 41 2
5	1 7 11	1 9 27	1 11 44	1 14 1	1 16 18	1 18 37	5	14 42 57	14 44 53	14 46 48	14 48 43	14 50 40	14 52 37
6	1 20 55	1 23 14	1 25 33	1 27 51	1 30 10	1 32 28	6	14 54 34	14 56 31	14 58 28	15 0 25	15 2 22	15 4 19
7	1 34 47	1 37 11	1 39 34	1 42 57	1 44 21	1 46 44	7	15 6 15	15 8 17	15 10 19	15 12 21	15 14 23	15 16 25
8	1 49 8	1 51 31	1 53 55	1 56 20	1 58 45	2 1 10	8	15 18 27	15 20 29	15 22 30	15 24 33	15 26 37	15 28 40
9	2 3 35	2 6 1	2 8 26	2 10 51	2 13 22	2 15 52	9	15 30 43	15 32 47	15 34 50	15 36 53	15 39 2	15 41 11
10	2 18 23	2 20 54	2 23 25	2 25 55	2 28 26	2 30 57	10	15 43 21	15 45 30	15 47 39	15 49 49	15 51 58	15 54 7
11	2 33 35	2 36 14	2 38 52	2 41 31	2 44 9	2 46 47	11	15 56 24	15 58 40	16 0 57	16 3 14	16 5 30	16 7 47
12	2 49 26	2 52 6	2 54 47	2 57 28	3 0 9	3 2 49	12	16 10 4	16 12 26	16 14 48	16 17 10	16 19 32	16 21 54
13	3 5 30	3 8 11	3 11 3	3 13 55	3 16 46	3 19 38	13	16 24 16	16 26 37	16 29 4	16 31 31	16 33 57	16 36 24
14	3 22 29	3 25 21	3 28 21	3 31 22	3 34 23	3 37 23	14	16 38 51	16 41 17	16 43 56	16 46 35	16 49 14	16 51 53
15	3 40 24	3 43 24	3 46 37	3 49 50	3 53 3	3 56 16	15	16 54 32	16 57 10	17 0 1	17 2 52	17 5 43	17 8 34
16	3 59 29	4 2 42	4 6 10	4 9 38	4 13 6	4 16 34	16	17 11 25	17 14 18	17 17 20	17 20 23	17 23 25	17 26 27
17	4 20 2	4 23 38	4 27 14	4 30 50	4 34 26	4 38 2	17	17 29 30	17 32 49	17 36 8	17 39 27	17 42 46	17 46 4
18	4 42 17	4 46 32	4 50 47	4 55 2	4 59 17	5 4 1	18	17 49 57	17 53 50	17 57 43	18 1 36	18 5 29	18 9 51
19	5 8 45	5 13 29	5 18 12	5 23 24	5 28 37	5 33 49	19	18 14 12	18 18 34	18 22 56	18 27 47	18 32 38	18 37 29
20	5 40 9	5 46 29	5 52 49	6 0 17	6 7 44	6 17 19	20	18 43 27	18 49 25	18 55 23	19 2 30	19 9 36	19 18 50
21	6 26 55	6 37 37	6 59 13	...	...	...	21	19 28 3	19 38 23	19 59 37	...	...	...

Maximum equation—21 ghat., 23 palas for Anomaly of 7 days 16 ghatikas 29 palas.

Eqn.	50	40	30	20	10	0
Palas. —						
Ghat. d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.
21	...	...	...	7 33 39	7 54 53	8 5 13
20	8 14 26	8 23 40	8 30 46	8 37 53	8 43 51	8 49 49
19	8 55 47	9 0 38	9 5 29	9 10 20	9 14 42	9 19 3
18	9 23 25	9 27 46	9 31 39	9 35 32	9 39 25	9 43 18
17	9 47 12	9 50 31	9 53 50	9 57 9	10 0 28	10 3 46
16	10 6 48	10 9 50	10 12 53	10 15 55	10 18 58	10 21 49
15	10 24 40	10 27 31	10 30 22	10 33 13	10 36 6	10 38 45
14	10 41 24	10 44 3	10 46 42	10 49 21	10 51 59	10 54 26
13	10 56 53	10 59 19	11 1 46	11 4 12	11 6 39	11 9 1
12	11 11 23	11 13 45	11 16 7	11 18 29	11 20 51	11 23 12
11	11 25 29	11 27 46	11 30 2	11 32 19	11 34 35	11 36 52
10	11 39 9	11 41 18	11 43 27	11 45 37	11 47 46	11 49 55
9	11 52 5	11 54 14	11 56 23	11 58 26	12 0 29	12 2 33
8	12 4 36	12 6 40	12 8 43	12 10 46	12 12 48	12 14 50
7	12 16 52	12 18 54	12 20 56	12 22 58	12 25 0	12 27 1
6	12 28 58	12 30 55	12 32 52	12 34 49	12 36 46	12 38 43
5	12 40 40	12 42 36	12 44 31	12 46 27	12 48 22	12 50 18
4	12 52 13	12 54 9	12 56 4	12 57 59	12 59 53	13 1 47
3	13 3 41	13 5 35	13 7 29	13 9 23	13 11 17	13 13 11
2	13 15 4	13 16 56	13 18 48	13 20 40	13 22 32	13 24 24
1	13 26 16	13 28 8	13 30 1	13 31 52	13 33 43	13 35 34
0	13 37 25	13 39 16	13 41 7	13 42 58	13 44 49	13 46 38

Maximum equation+21 ghat., 23 palas for Anomaly of 20 days 16 ghatikas 47 palas.

Eqn.	50	40	30	20	10	0
Palas. —						
Ghat. d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.
21	...	...	...	20 34 3	20 55 39	21 6 18
20	21 16 42	21 25 25	21 33 23	21 40 53	21 47 40	21 53 27
19	21 59 27	22 4 53	22 10 17	22 15 4	22 20 20	22 24 45
18	22 29 28	22 34 11	22 38 35	22 42 37	22 46 49	22 50 40
17	22 54 52	22 58 41	23 2 20	23 6 8	23 9 40	23 13 30
16	23 17 6	23 20 24	23 23 45	23 27 21	23 30 36	23 34 0
15	23 37 24	23 40 23	23 43 30	23 46 37	23 49 55	23 52 44
14	23 55 56	23 59 8	24 1 55	24 5 0	24 7 45	24 10 45
13	24 13 45	24 16 23	24 19 20	24 22 15	24 24 58	24 27 50
12	24 30 30	24 33 18	24 36 6	24 38 35	24 41 23	24 44 15
11	24 46 45	24 49 23	24 52 11	24 54 35	24 57 8	24 59 42
10	25 2 25	25 5 8	25 7 26	25 10 0	25 12 18	25 14 54
9	25 17 30	25 19 53	25 22 37	25 24 53	25 27 26	25 29 49
8	25 32 4	25 34 28	25 36 51	25 39 27	25 42 1	25 44 9
7	25 46 37	25 49 7	25 51 19	25 53 43	25 56 5	25 58 39
6	26 0 58	26 3 5	26 5 31	26 7 58	26 10 10	26 12 33
5	26 14 41	26 17 5	26 19 29	26 21 33	26 23 55	26 26 21
4	26 28 36	26 30 50	26 33 2	26 35 18	26 37 28	26 39 51
3	26 42 4	26 44 13	26 46 31	26 48 51	26 51 3	26 53 26
2	26 55 41	26 57 51	27 0 6	27 2 14	27 4 29	27 6 51
1	27 8 54	27 11 12	27 13 29	27 15 39	27 17 54	27 20 5
0	27 22 17	27 24 21	27 26 40	27 28 55	27 31 6	27 33 17

TABLE IX—(j)—For Nakshatras.
Moon's Anomaly and Moon's Equation of the Centre in days and fractions of a day.
SURYA SIDDHANTA.

[illegible]

Maximum equation 382967 for Anomaly of 7.2752 days.

TABLE IX—(k)—For Nakshatras.
Moon's Anomaly and Moon's Equation of the Centre in days and fractions of a day.
SURYA SIDDHANTA.

Eqn.	0	1	2	3	4	5	6	7	8	9	Eqn.	0	1	2	3	4	5	6	7	8	9	Eqn.	0	1	2	3	4	5	6	7	8	9			
+ Moon's Anomaly in days.												+ Moon's Anomaly in days.												+ Moon's Anomaly in days.											
·00	13-777	13-787	13-797	13-807	13-818	13-828	13-839	13-849	13-860	13-870	·38	20-907	20-984	21-057	21-128	21-181	21-233	21-285	21-336	21-389	21-442	·38	20-907	20-984	21-057	21-128	21-181	21-233	21-285	21-336	21-389	21-442			
·01	13-880	13-891	13-902	13-912	13-922	13-932	13-943	13-953	13-963	13-974	·37	21-480	21-522	21-564	21-604	21-643	21-682	21-720	21-759	21-795	21-829	·37	21-480	21-522	21-564	21-604	21-643	21-682	21-720	21-759	21-795	21-829			
·02	13-984	13-994	14-005	14-016	14-026	14-036	14-046	14-057	14-067	14-077	·36	21-865	21-896	21-930	21-963	21-996	22-031	22-062	22-091	22-118	22-147	·36	21-865	21-896	21-930	21-963	21-996	22-031	22-062	22-091	22-118	22-147			
·03	14-087	14-098	14-108	14-119	14-129	14-139	14-150	14-161	14-171	14-181	·35	22-176	22-204	22-233	22-263	22-292	22-321	22-347	22-373	22-399	22-424	·35	22-176	22-204	22-233	22-263	22-292	22-321	22-347	22-373	22-399	22-424			
·04	14-191	14-202	14-213	14-223	14-233	14-243	14-253	14-264	14-274	14-285	·34	22-449	22-474	22-501	22-526	22-550	22-575	22-600	22-625	22-650	22-673	·34	22-449	22-474	22-501	22-526	22-550	22-575	22-600	22-625	22-650	22-673			
·05	14-296	14-306	14-317	14-328	14-338	14-348	14-359	14-369	14-380	14-390	·33	22-696	22-719	22-742	22-765	22-787	22-809	22-832	22-855	22-877	22-899	·33	22-696	22-719	22-742	22-765	22-787	22-809	22-832	22-855	22-877	22-899			
·06	14-401	14-411	14-422	14-433	14-444	14-454	14-464	14-475	14-486	14-496	·32	22-922	22-944	22-965	22-986	23-007	23-028	23-048	23-068	23-089	23-109	·32	22-922	22-944	22-965	22-986	23-007	23-028	23-048	23-068	23-089	23-109			
·07	14-507	14-517	14-527	14-538	14-548	14-559	14-569	14-580	14-591	14-602	·31	23-130	23-151	23-172	23-192	23-213	23-234	23-253	23-272	23-292	23-311	·31	23-130	23-151	23-172	23-192	23-213	23-234	23-253	23-272	23-292	23-311			
·08	14-613	14-624	14-634	14-644	14-655	14-666	14-677	14-687	14-698	14-708	·30	23-329	23-348	23-367	23-386	23-405	23-425	23-444	23-463	23-482	23-501	·30	23-329	23-348	23-367	23-386	23-405	23-425	23-444	23-463	23-482	23-501			
·09	14-719	14-730	14-741	14-752	14-762	14-773	14-784	14-795	14-805	14-816	·29	23-520	23-538	23-557	23-575	23-594	23-612	23-629	23-646	23-664	23-681	·29	23-520	23-538	23-557	23-575	23-594	23-612	23-629	23-646	23-664	23-681			
·10	14-827	14-838	14-848	14-859	14-870	14-882	14-893	14-904	14-915	14-925	·28	23-699	23-717	23-735	23-753	23-771	23-789	23-806	23-824	23-841	23-858	·28	23-699	23-717	23-735	23-753	23-771	23-789	23-806	23-824	23-841	23-858			
·11	14-936	14-947	14-958	14-968	14-979	14-990	15-001	15-012	15-024	15-035	·27	23-875	23-892	23-909	23-926	23-942	23-959	23-977	23-993	24-010	24-027	·27	23-875	23-892	23-909	23-926	23-942	23-959	23-977	23-993	24-010	24-027			
·12	15-046	15-057	15-068	15-079	15-089	15-100	15-112	15-123	15-134	15-145	·26	24-044	24-060	24-077	24-093	24-109	24-126	24-142	24-158	24-175	24-191	·26	24-044	24-060	24-077	24-093	24-109	24-126	24-142	24-158	24-175	24-191			
·13	15-157	15-168	15-180	15-191	15-202	15-213	15-224	15-236	15-247	15-258	·25	24-207	24-223	24-239	24-255	24-271	24-287	24-303	24-318	24-333	24-349	·25	24-207	24-223	24-239	24-255	24-271	24-287	24-303	24-318	24-333	24-349			
·14	15-269	15-280	15-292	15-303	15-314	15-326	15-337	15-348	15-359	15-370	·24	24-366	24-382	24-397	24-413	24-430	24-446	24-461	24-476	24-492	24-507	·24	24-366	24-382	24-397	24-413	24-430	24-446	24-461	24-476	24-492	24-507			
·15	15-382	15-394	15-405	15-417	15-428	15-439	15-450	15-462	15-474	15-486	·23	24-521	24-536	24-551	24-566	24-581	24-596	24-611	24-626	24-642	24-657	·23	24-521	24-536	24-551	24-566	24-581	24-596	24-611	24-626	24-642	24-657			
·16	15-498	15-510	15-521	15-533	15-544	15-556	15-567	15-578	15-589	15-601	·22	24-673	24-688	24-703	24-718	24-732	24-747	24-763	24-778	24-792	24-806	·22	24-673	24-688	24-703	24-718	24-732	24-747	24-763	24-778	24-792	24-806			
·17	15-613	15-625	15-637	15-649	15-661	15-673	15-685	15-697	15-709	15-721	·21	24-821	24-836	24-850	24-865	24-880	24-894	24-908	24-923	24-937	24-951	·21	24-821	24-836	24-850	24-865	24-880	24-894	24-908	24-923	24-937	24-951			
·18	15-733	15-745	15-757	15-769	15-781	15-793	15-804	15-816	15-828	15-840	·20	24-965	24-980	24-995	25-009	25-024	25-039	25-053	25-067	25-082	25-096	·20	24-965	24-980	24-995	25-009	25-024	25-039	25-053	25-067	25-082	25-096			
·19	15-862	15-864	15-876	15-888	15-901	15-914	15-926	15-938	15-950	15-963	·19	25-110	25-124	25-138	25-151	25-164	25-178	25-193	25-207	25-221	25-235	·19	25-110	25-124	25-138	25-151	25-164	25-178	25-193	25-207	25-221	25-235			
·20	15-975	15-988	16-001	16-014	16-026	16-038	16-051	16-064	16-076	16-088	·18	25-249	25-263	25-277	25-291	25-305	25-319	25-332	25-346	25-360	25-374	·18	25-249	25-263	25-277	25-291	25-305	25-319	25-332	25-346	25-360	25-374			
·21	16-101	16-113	16-125	16-138	16-151	16-164	16-177	16-191	16-204	16-217	·17	25-388	25-402	25-416	25-429	25-443	25-457	25-470	25-484	25-497	25-511	·17	25-388	25-402	25-416	25-429	25-443	25-457	25-470	25-484	25-497	25-511			
·22	16-230	16-243	16-256	16-269	16-282	16-295	16-308	16-321	16-334	16-348	·16	25-524	25-537	25-551	25-565	25-578	25-591	25-605	25-619	25-633	25-647	·16	25-524	25-537	25-551	25-565	25-578	25-591	25-605	25-619	25-633	25-647			
·23	16-361	16-374	16-387	16-401	16-414	16-427	16-441	16-455	16-469	16-483	·15	25-660	25-673	25-687	25-700	25-713	25-726	25-739	25-752	25-766	25-779	·15	25-660	25-673	25-687	25-700	25-713	25-726	25-739	25-752	25-766	25-779			
·24	16-497	16-511	16-525	16-539	16-553	16-566	16-580	16-594	16-608	16-621	·14	25-792	25-805	25-819	25-833	25-846	25-859	25-873	25-886	25-898	25-911	·14	25-792	25-805	25-819	25-833	25-846	25-859	25-873	25-886	25-898	25-911			
·25	16-635	16-649	16-663	16-677	16-691	16-706	16-721	16-736	16-751	16-766	·13	25-924	25-938	25-951	25-965	25-979	25-992	26-005	26-018	26															

TABLE IX—(l)—For Nakshatras.

Moon's Anomaly and Equation of the Centre in Days, Ghatikas and Palas.
SURYA SIDDHANTA.

Eqn.	0	10	20	30	40	50	Eqn.	0	10	20	30	40	50
las. —							+						
Ghat. d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	Ghat. d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.
0	...	2 5	4 10	6 10	8 15	10 15	0	...	13 48 20	13 50 5	13 51 50	13 53 30	13 55 15
1	12 25	14 30	16 30	18 35	20 40	22 40	1	13 57 0	13 58 40	14 0 25	14 2 10	14 3 55	14 5 35
2	24 50	26 45	28 50	31 0	33 0	35 10	2	14 7 20	14 9 5	14 10 50	14 12 35	14 14 15	14 16 0
3	37 10	39 20	41 20	43 25	45 35	47 40	3	14 17 45	14 19 35	14 21 15	14 23 0	14 24 45	14 26 35
4	49 45	51 45	53 55	56 5	58 5	1 0 10	4	14 28 20	14 30 0	14 31 45	14 33 35	14 35 20	14 37 5
5	1 2 20	1 4 30	1 6 35	1 8 45	1 10 45	1 13 0	5	14 38 50	14 40 40	14 42 25	14 44 20	14 46 0	14 47 50
6	1 15 5	1 17 20	1 19 20	1 21 35	1 23 45	1 25 55	6	14 49 35	14 51 25	14 53 15	14 55 5	14 56 55	14 58 40
7	1 28 5	1 30 10	1 32 20	1 34 30	1 36 45	1 38 55	7	15 0 35	15 2 25	15 4 15	15 6 0	15 7 55	15 9 45
8	1 41 5	1 43 20	1 45 35	1 47 55	1 50 0	1 52 10	8	15 11 40	15 13 30	15 15 25	15 17 20	15 19 5	15 21 0
9	1 54 25	1 56 45	1 59 0	2 1 15	2 3 30	2 5 45	9	15 22 55	15 24 50	15 26 45	15 28 40	15 30 40	15 32 30
10	2 8 5	2 10 15	2 12 35	2 14 55	2 17 20	2 19 35	10	15 34 30	15 36 25	15 38 20	15 40 25	15 42 25	15 44 20
11	2 21 55	2 24 15	2 26 35	2 28 55	2 31 15	2 33 40	11	15 46 20	15 48 20	15 50 20	15 52 25	15 54 25	15 56 25
12	2 36 10	2 38 35	2 40 55	2 43 20	2 45 50	2 48 20	12	15 58 30	16 0 40	16 2 40	16 4 45	16 6 50	16 9 0
13	2 50 45	2 53 15	2 55 50	2 58 25	3 0 55	3 3 20	13	16 11 15	16 13 15	16 15 35	16 17 45	16 19 55	16 22 0
14	3 5 55	3 8 30	3 11 5	3 13 50	3 15 50	3 19 25	14	16 24 20	16 26 35	16 28 55	16 31 15	16 33 35	16 35 50
15	3 21 45	3 24 25	3 27 10	3 30 0	3 32 55	3 35 35	15	16 38 5	16 40 25	16 42 50	16 45 25	16 47 50	16 50 20
16	3 38 25	3 41 10	3 44 5	3 47 0	3 50 0	3 52 55	16	16 52 40	16 55 10	16 57 45	17 0 20	17 2 55	17 5 35
17	3 55 55	3 58 50	4 1 50	4 5 5	4 8 15	4 11 25	17	17 8 10	17 10 55	17 13 30	17 16 25	17 19 15	17 22 0
18	4 13 30	4 17 50	4 21 5	4 24 35	4 28 0	4 31 30	18	17 24 55	17 27 50	17 30 45	17 33 50	17 36 55	17 40 10
19	4 35 0	4 38 30	4 42 15	4 46 5	4 49 50	4 53 35	19	17 43 20	17 46 25	17 49 55	17 53 20	17 56 50	18 0 10
20	4 57 35	5 1 54	5 6 10	5 10 25	5 14 40	5 19 0	20	18 3 50	18 7 50	18 11 45	18 15 45	18 19 40	18 24 0
21	5 24 25	5 29 15	5 34 15	5 40 0	5 45 45	5 51 55	21	18 28 25	18 33 10	18 37 55	18 43 20	18 48 40	18 54 25
22	5 58 40	6 5 20	6 13 45	6 22 25	6 33 35	6 47 0	22	19 0 55	19 7 20	19 15 20	19 23 35	19 34 25	19 47 30
23	7 16 30	...	...	...	...	...	23	20 16 50	...	...	...	...	...

Maximum equation 22 ghat 59 palas for Anomaly of 17 days 16 ghatikas 31 palas.

Eqn.	50	40	30	20	10	0	Eqn.	50	40	30	20	10	0
las. —							+						
Ghat. d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	Ghat. d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.
23	...	...	...	...	...	7 16 30	23	...	...	...	...	...	20 16 50
22	7 46 0	7 58 55	8 9 40	8 16 55	8 25 50	8 32 30	22	20 46 40	20 59 45	21 10 50	21 19 30	21 27 50	21 34 40
21	8 38 50	8 44 30	8 49 50	8 55 25	9 0 10	9 4 40	21	21 41 25	21 47 30	21 53 5	21 59 5	22 4 0	22 8 50
20	9 9 5	9 13 40	9 17 30	9 21 30	9 25 25	9 29 30	20	22 13 40	22 18 40	22 22 50	22 27 0	22 31 15	22 35 45
19	9 33 5	9 36 25	9 39 55	9 43 25	9 46 55	9 49 55	19	22 39 40	22 43 25	22 47 5	22 51 5	22 54 45	22 58 15
18	9 53 5	9 56 25	9 59 25	10 2 30	10 5 25	10 8 20	18	23 1 45	23 5 20	23 8 45	23 12 10	23 15 25	23 18 40
17	10 11 20	10 14 5	10 16 50	10 19 45	10 22 25	10 25 5	17	23 21 50	23 25 0	23 29 20	23 31 25	23 34 25	23 37 15
16	10 27 40	10 30 20	10 32 55	10 35 30	10 38 5	10 40 35	16	23 40 15	23 43 20	23 46 15	23 49 15	23 52 5	23 54 55
15	10 43 0	10 45 25	10 47 55	10 50 25	10 52 50	10 55 10	15	23 57 35	24 0 25	24 3 15	24 6 0	24 8 50	24 11 30
14	10 57 25	10 59 45	11 2 5	11 4 25	11 6 40	11 8 55	14	24 14 10	24 16 50	24 19 25	24 22 5	24 24 45	24 27 25
13	11 11 15	11 13 20	11 15 30	11 17 40	11 20 0	11 22 0	13	24 30 0	24 32 20	24 34 55	24 37 25	24 40 5	24 42 30
12	11 24 15	11 26 25	11 28 30	11 30 35	11 32 30	11 34 45	12	24 44 50	24 47 25	24 49 55	24 52 25	24 54 40	24 57 5
11	11 36 50	11 38 55	11 40 55	11 42 55	11 44 55	11 46 55	11	24 59 35	25 1 55	25 4 20	25 6 40	25 9 0	25 11 20
10	11 48 55	11 50 50	11 52 55	11 54 55	11 56 55	11 58 45	10	25 13 40	25 15 55	25 18 25	25 20 40	25 23 0	25 25 10
9	12 0 45	12 2 35	12 4 35	12 6 30	12 8 25	12 10 20	9	25 27 35	25 28 55	25 32 0	25 34 15	25 36 35	25 38 50
8	12 12 15	12 14 10	12 16 0	12 17 55	12 19 45	12 21 40	8	25 41 5	25 43 15	25 45 25	25 47 45	25 49 55	25 52 10
7	12 23 30	12 25 25	12 27 15	12 29 5	12 30 50	12 32 45	7	25 54 20	25 56 30	25 58 40	26 0 55	26 3 5	26 5 10
6	12 34 35	12 36 25	12 38 10	12 40 0	12 41 50	12 43 40	6	26 7 25	26 9 35	26 11 45	26 13 55	26 16 0	26 18 10
5	12 45 25	12 47 20	12 49 0	12 50 50	12 52 35	12 54 25	5	26 20 20	26 22 30	26 24 35	26 26 40	26 28 40	26 31 0
4	12 56 10	12 57 55	12 59 45	13 1 30	13 3 15	13 4 55	4	26 33 5	26 35 10	26 37 15	26 39 25	26 41 30	26 43 30
3	13 6 40	13 8 30	13 10 15	13 12 0	13 13 40	13 15 30	3	26 45 35	26 47 45	26 49 50	26 51 55	26 53 55	26 56 5
2	13 17 20	13 19 0	13 20 0	13 22 25	13 24 10	13 25 55	2	26 58 10	27 0 15	27 2 20	27 4 25	27 6 30	27 8 30
1	13 27 40	13 29 20	13 31 5	13 32 50	13 34 35	13 36 15	1	27 10 40	27 12 35	27 14 45	27 16 50	27 18 50	27 20 50
0	13 38 5	13 39 45	13 41 30	13 43 15	13 44 55	...	0	27 23 0	27 25 0	27 27 10	27 29 5	27 31 15	...

Maximum equation 22 ghat 59 palas for Anomaly of 20 days 16 ghatikas 47 palas.

TABLE X—

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	Christian Era.	☉'s Anom col. 5		☉'s Anom col. 6		+ 29°53059		+ 59°06117		+ 88°59176		+ 118°12235										
							☉'s Anom col. 5		☉'s Anom col. 6		+ 29°53059		+ 59°06117		+ 88°59176		+ 118°12235										
							☉'s Anom col. 5		☉'s Anom col. 6		+ 29°53059		+ 59°06117		+ 88°59176		+ 118°12235										
Month and day A.D.		Fraction of day.		Week-day of 1st January.		Yaisakha		Jyeshtha		Ashada		Sravana		Bhadrapada													
Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction								
3101	57	13M	·9831	9·9981	22·736	1	5	3	Mr	23	·98	5	Ap	22	·51	7	My	22	·04	1	Je	20	·57	3	Jl	20	·1
3102	58	14M	·2419	28·6370	20·870	1	7	2	Ap	11	·88	4	My	11	·41	5	Je	9	·94	7	Jl	9	·47	2	Au	8	·0
3103	59	14M	·5006	17·7453	17·027	2	1	7	Ap	1	·25	1	Ap	30	·78	3	My	30	·31	4	Je	28	·84	6	Jl	28	·3
3104	60	14M	·7594	6·8536	13·184	3	2	4	Mr	21	·61	6	Ap	20	·14	7	My	19	·67	2	Je	18	·20	5	Au	16	·2
3105	61	14M	·0181	25·4925	11·317	4	3	3	Ap	8	·51	5	My	8	·04	6	Je	6	·57	1	Jl	6	·10	2	Au	4	·6
3106	62	14M	·2769	14·6008	7·475	5	5	7	Mr	28	·88	2	Ap	27	·41	3	My	26	·94	5	Je	25	·47	7	Jl	25	·0
3107	63	14M	·5356	3·7091	3·633	6	6	5	Mr	18	·24	6	Ap	16	·77	1	My	16	·31	4	Jl	14	·37	5	Au	12	·9
3108	64	14M	·7944	22·3479	1·765	7	7	4	Ap	6	·14	5	My	5	·67	7	Je	4	·20	1	Jl	3	·73	3	Au	2	·2
3109	65	14M	·0531	11·4562	25·477	8	1	1	Mr	25	·51	3	Ap	24	·04	4	My	23	·57	6	Je	22	·10	7	Jl	21	·6
3110	66	14M	·3119	0·5645	21·634	9	3	5	Mr	14	·88	1	My	12	·94	3	Je	11	·47	5	Jl	11	·00	6	Au	9	·5
3111	67	14M	·5707	19·2034	19·767	10	4	4	Ap	2	·77	6	My	2	·30	7	My	31	·83	2	Je	30	·37	3	Jl	29	·9
3112	68	14M	·8294	8·3117	15·925	11	5	2	Mr	23	·14	3	Ap	21	·67	5	My	21	·20	6	Je	19	·73	1	Jl	19	·2
3113	69	14M	·0882	26·9506	14·058	12	6	1	Ap	10	·04	2	My	9	·57	4	Je	8	·10	5	Jl	7	·63	7	Au	6	·1
3114	70	14M	·3469	16·0589	10·215	13	1	5	Mr	30	·41	6	Ap	28	·94	1	My	28	·47	3	Je	27	·00	4	Jl	26	·5
3115	71	14M	·6057	5·1672	6·373	14	2	2	Mr	19	·77	4	Ap	18	·30	5	My	17	·83	1	Jl	15	·89	3	Au	14	·4
3116	72	14M	·8644	23·8061	4·506	15	3	1	Ap	7	·67	3	My	7	·20	4	Je	5	·73	6	Jl	5	·26	7	Au	3	·7
3117	73	14M	·1232	12·9144	0·663	16	4	6	Mr	27	·04	7	Ap	25	·57	2	My	25	·10	3	Je	23	·63	5	Jl	23	·1
3118	74	14M	·3820	2·0227	24·375	17	6	3	Mr	16	·40	4	Ap	14	·93	1	Je	13	·00	2	Jl	12	·53	4	Au	11	·0
3119	75	14M	·6407	20·6616	22·508	18	7	2	Ap	4	·30	3	My	3	·83	5	Je	2	·36	6	Jl	1	·89	1	Jl	31	·4
3120	76	14M	·8995	9·7699	18·665	19	1	6	Mr	24	·67	1	Ap	23	·20	2	My	22	·73	4	Je	21	·26	5	Jl	20	·7
3121	77	14M	·1582	28·4088	16·799	20	2	5	Ap	11	·57	7	My	11	·10	1	Je	9	·63	3	Jl	9	·16	4	Au	7	·6
3122	78	14M	·4170	17·5171	12·956	21	4	2	Mr	31	·93	4	Ap	30	·46	5	My	29	·99	7	Je	28	·53	2	Jl	28	·0
3123	79	14M	·6757	6·6254	9·113	22	5	7	Mr	21	·30	1	Ap	19	·83	3	My	19	·36	4	Je	17	·89	7	Au	15	·9
3124	80	14M	·9345	25·2647	7·246	23	6	6	Ap	9	·20	7	My	8	·73	2	Je	7	·26	3	Jl	6	·79	5	Au	5	·3
3125	81	14M	·1932	14·3726	3·404	24	7	3	Mr	28	·57	5	Ap	27	·10	6	My	26	·63	1	Je	25	·16	2	Jl	24	·6
3126	82	14M	·4520	3·4809	27·115	25	2	7	Mr	17	·93	2	Ap	16	·46	3	My	15	·99	7	Jl	14	·05	1	Au	12	·5
3127	83	14M	·7108	22·1197	25·249	26	3	6	Ap	5	·83	1	My	5	·36	2	Je	3	·89	4	Jl	3	·42	5	Au	1	·9
3128	84	14M	·9695	11·2280	21·406	27	4	4	Mr	26	·20	5	Ap	24	·73	7	My	24	·26	1	Je	22	·79	3	Jl	22	·3
3129	85	14M	·2283	0·3363	17·563	28	5	1	Mr	14	·56	4	My	12	·63	6	Je	11	·16	7	Jl	10	·69	2	Au	9	·2
3130	86	14M	·4870	18·9752	15·696	29	7	7	Ap	2	·46	1	My	1	·99	3	My	31	·52	5	Je	30	·05	6	Jl	29	·5
3131	87	14M	·7458	8·0835	11·854	30	1	4	Mr	22	·83	6	Ap	21	·36	7	My	20	·89	2	Je	19	·42	3	Jl	18	·9
3132	88	15M	·0045	26·7224	9·987	31	2	3	Ap	10	·73	5	My	10	·26	6	Je	8	·79	1	Jl	8	·32	2	Au	6	·8
3133	89	14M	·2633	15·8307	6·144	32	3	1	Mr	30	·09	2	Ap	28	·62	4	My	28	·15	5	Je	26	·69	7	Jl	26	·2
3134	90	14M	·5221	4·9390	2·301	33	5	5	Mr	19	·46	6	Ap	17	·99	1	My	17	·52	4	Jl	15	·58	6	Au	14	·1
3135	91	14M	·7808	23·5779	0·435	34	6	4	Ap	7	·36	5	My	6	·89	7	Je	5	·42	1	Jl	4	·95	3	Au	3	·4
3136	92	15M	·0396	12·6862	24·146	35	7	1	Mr	27	·73	3	Ap	26	·26	4	My	25	·79	6	Je	24	·32	7	Jl	23	·8
3137	93	14M	·2983	1·7945	20·304	36	1	6	Mr	16	·09	7	Ap	14	·62	3	Je	12	·68	5	Jl	12	·21	6	Au	10	·7
3138	94	14M	·5571	20·4334	18·437	37	3	4	Ap	3	·99	6	My	3	·52	1	Je	2	·05	2	Jl	1	·58	4	Jl	31	·1
3139	95	14M	·8158	9·5417	14·594	38	4	2	Mr	24	·36	3	Ap	22	·89	5	My	22	·42	6	Je	20	·95	1	Jl	20	·4

ar years and New moons from B.C. 1 to A.D. 2000 (Surya Siddhanta).*

147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·30588	+ 324·83647															
9·680	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760	+ 354·36705															
						+ 21·736															
						+ 23·712															
Asvina	Kartika		Margasira		Pausha		A.D.	Magha		A.D.	Phalguna		Chaitra								
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction			
Au 18	·63	7 O	16	·69	2 N	15	·23	Pausha. Kshaya.		3 D	14○	·76	1	5 Jr	13	·29	6 F	11	·82		
S 17	·16									2	2 Jr	2	·65		4 F	1	·18	5 Mr	13	·35	
S 6	·53	5 O	6	·06	6 N	4	·59	1 D	4	·12	7 D	23	·02	3	1 Jr	21	·55	3 F	20	·71	
Au 26	·90	2 S	25	·43	3 O	24○	·96	5 N	23●	·49	4	5 Jr	10	·92		7 F	9	·45	1 Mr	9	·98
S 14	·80	1 O	14○	·33	2 N	12	·86	4 D	12	·39											
S 3	·16	5 O	2○	·69	7 N	1	·22	1 N	30	·75	3 D	30	·29	5	4 Jr	28	·82	6 F	27	·35	
Au 23	·53	3 S	22●	·06	4 O	21	·59	6 N	20	·12	7 D	19	·65	6	2 Jr	18	·18	3 F	16○	·71	
S 11●	·43	1 O	10	·96	3 N	9	·49	5 D	9	·02	7	6 Jr	7	·55		1 F	6●○	·08	2 Mr	7	·61
Au 31●	·79	6 S	30	·33	7 O	29	·86	2 N	28	·39	3 D	27	·92	8	5 Jr	26●○	·45	6 F	24	·98	
Au 20	·16	3 S	18	·69	5 O	18	·22	6 N	16	·75	1 D	16	·28	9	2 Jr	14●	·81	4 F	13	·35	
S 8	·06	2 O	7	·59	4 N	6	·12	5 D	5○	·65	10	7 Jr	4	·18		1 F	2	·71	3 Mr	4	·24
Au 28	·43	6 S	26	·96	1 O	26	·49	3 N	25●○	·02	4 D	24	·55	11	6 Jr	23	·08	7 F	21	·61	
S 16	·32	5 O	15	·85	7 N	14●○	·39	1 D	13	·92	12	3 Jr	12	·45		4 F	10	·98	6 Mr	11	·51
S 4	·69	3 O	4	·22	4 N	2	·75	6 D	2	·28	7 D	31	·81	13	2 Jr	30	·34	3 F	28	·87	
Au 25	·06	7 S	23○	·59	2 O	23	·12	3 N	21	·65	5 D	21	·18	14	6 Jr	19	·71	1 F	18	·24	
S 12○	·96	6 O	12	·49	1 N	11	·02	2 D	10	·55	15	4 Jr	9	·08		5 F	7	·61	7 Mr	9○	·14
S 2●○	·32	3 O	1	·85	5 O	31	·38	6 N	29	·91	1 D	29	·45	16	2 Jr	27	·98	4 F	26	·51	
Au 21●	·69	1 S	20	·22	2 O	19	·75	4 N	18	·28	5 D	17	·81	17	7 Jr	16○	·34	1 F	14●	·87	
S 9	·59	7 O	9	·12	1 N	7	·65	3 D	7	·18	18	4 Jr	5○	·71		6 F	4	·24	7 Mr	5	·77
Au 29	·95	4 S	28	·49	6 O	28	·02	7 N	26	·55	2 D	26○	·08	19	3 Jr	24	·61	5 F	23	·14	
Au 19	·32	3 O	17	·38	4 N	15	·91	6 D	15●	·44	20	7 Jr	13	·97		2 F	12	·51	4 Mr	13	·04
S 17	·85																				
S 6	·22	7 O	5	·75	2 N	4○	·28	3 D	3●	·81	21	5 Jr	2	·34		6 Jr	31	·87	1 Mr	2	·40
Au 26	·59	5 S	25	·12	6 O	24○	·65	1 N	23●	·18		2 D	22	·71	22	4 Jr	21	·24	5 F	19	·77
S 14	·48	4 O	14○	·01	5 N	12	·55	7 D	12	·08	23	1 Jr	10	·61		3 F	9	·14	4 Mr	10	·67
S 3	·85	1 O	3	·38	2 N	1	·91	4 D	1	·44		5 D	30	·97	24	7 Jr	29	·50	2 F	28○	·03
Au 23○	·22	5 S	21●	·75	7 O	21	·28	1 N	19	·81		3 D	19	·34	25	4 Jr	17	·87	6 F	16○	·40
S 11●	·12	4 O	10	·65	6 N	9	·18	7 D	8	·71	26	2 Jr	7	·24		3 F	5●○	·77	5 Mr	7	·30
Au 31	·48	2 S	30	·01	3 O	29	·54	5 N	28	·07		6 D	27	·61	27	1 Jr	26●	·14	2 F	24	·67
Au 20	·85	6 S	19	·38	7 O	18	·91	2 N	17	·44		3 D	16○	·97	28	5 Jr	15	·50	7 F	14	·03
S 7	·75	5 O	7	·28	6 N	5	·81	1 D	5○	·34	29	2 Jr	3	·87		4 F	2	·40	5 Mr	3	·93
Au 28	·11	2 S	26	·65	4 O	26	·18	5 N	24●○	·71		7 D	24	·24	30	1 Jr	22	·77	3 F	21	·30
S 16	·01	1 O	15	·54	3 N	14●	·07	4 D	13	·60	31	6 Jr	12	·13		7 F	10	·67	2 Mr	12	·20
S 5	·38	5 O	4○	·91	7 N	3	·44	1 D	2	·97	32	3 Jr	1	·50		5 Jr	31	·03	6 F	29	·56
Au 24	·75	3 S	23○	·28	4 O	22	·81	6 N	21	·34		7 D	20	·87	33	2 Jr	19	·40	3 F	17	·93
S 12●○	·64	2 O	12	·17	3 N	10	·71	5 D	10	·24	34	6 Jr	8	·77		1 F	7	·30	2 Mr	8●	·83
S 2●	·01	6 O	1	·54	1 O	31	·07	2 N	29	·60		4 D	29	·13	35	5 Jr	27○	·66	7 F	26	·19
Au 22	·38	3 S	20	·91	5 O	20	·44	6 N	18	·97		1 D	18	·50	36	3 Jr	17○	·03	4 F	15●	·56
S 9	·28	2 O	8	·81	4 N	7	·34	5 D	6	·87	37	7 Jr	5○	·40		1 F	3	·93	3 Mr	5	·46
Au 29	·64	7 S	28	·17	1 O	27	·70	3 N	26	·23		4 D	25●	·77	38	6 Jr	24	·30	7 F	22	·83
Au 19	·01	6 O	17	·07	7 N	15○	·60	2 D	15	·13	39	3 Jr	13	·66		5 F	12	·19	6 Mr	13	·73
S 17	·54																				

* From A.D. 500 to A.D. 999 Arya Siddhanta figures have been given in detail, while Surya Siddhanta figures for the same period given in abstract at pages 76—79 below.

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	☉'s Anom col. 5 + 29°53059										☾'s Anom col. 6 + 1°976										+ 59°06117										+ 88°59176										+ 118°12235									
							☉'s Anom col. 6 + 1°976										+ 59°06117										+ 88°59176										+ 118°12235																			
							☉'s Anom col. 6 + 1°976										+ 59°06117										+ 88°59176										+ 118°12235																			
							☉'s Anom col. 6 + 1°976										+ 59°06117										+ 88°59176										+ 118°12235																			
							Week-day of 1st January.																																																	

Surya Siddhanta.

147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·30588	+ 324·83647				
+ 9·880	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760	+ 354·36705				
						+ 21·736				
						+ 23·712				
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra		
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
S 6	·91	3 O	6	·44	4 N	4 O	·97	6 D	4	·50
Au 26	·27	7 S	24	·81	2 O	24 O	·34	3 N	22	·87
S 14	·17	6 O	13	·70	1 N	12	·23	2 D	11	·76
S 3 O	·54	4 O	3	·07	5 N	1	·60	7 D	1	·13
Au 23 O	·91	1 S	22	·44	2 O	21	·97	4 N	20	·50
S 10	·80	7 O	10	·33	1 N	8	·87	3 D	8	·40
Au 31	·17	4 S	29	·70	6 O	29	·23	7 N	27	·76
Au 20	·54	2 S	19	·07	3 O	18	·60	5 N	17	·13
S 8	·44	7 O	7	·97	2 N	6	·50	4 D	6 O	·03
Au 27	·80	5 S	26	·33	6 O	25	·86	1 N	24	·39
S 15	·70	4 O	15 O	·23	5 N	13	·76	7 D	13	·29
S 5	·07	1 O	4 O	·60	3 N	3	·13	4 D	2	·66
Au 25	·43	5 S	23	·97	7 O	23	·50	2 N	22	·03
S 12	·33	4 O	11	·86	6 N	10	·39	7 D	9	·92
S 1	·70	2 O	1	·23	3 O	30	·76	5 N	29	·29
Au 22	·07	6 S	20	·60	1 O	20	·13	2 N	18	·66
S 9	·96	5 O	9	·49	7 N	8	·03	1 D	7	·56
Au 29	·33	2 S	27	·86	4 O	27	·39	5 N	25 O	·92
Au 18	·70	1 O	16	·76	3 N	15 O	·29	4 D	14	·82
S 17	·23									
S 6	·60	6 O	6	·13	7 N	4 O	·66	2 D	4	·19
Au 26	·96	3 S	25	·49	5 O	25	·02	6 N	23	·55
S 13 O	·86	2 O	13	·39	3 N	11	·92	5 D	11	·45
S 3 O	·23	6 O	2	·76	1 N	1	·29	2 N	30	·82
Au 23 O	·59	4 S	22	·13	5 O	21	·66	7 N	20	·19
S 11	·49	3 O	11	·02	4 N	9	·55	6 D	9	·08
Au 30	·86	7 S	29	·39	1 O	28	·92	3 N	27	·45
Au 20	·23	4 S	18	·76	6 O	18	·29	7 N	16	·82
S 8	·12	3 O	7	·65	5 N	6	·19	6 D	5	·72
Au 28	·49	1 S	27	·02	2 O	26 O	·55	4 N	25	·08
S 15	·39	6 O	14 O	·92	1 N	13	·45	2 D	12	·98
S 4	·76	4 O	4	·29	5 N	2	·82	7 D	2	·35
Au 25	·12	1 S	23	·65	3 O	23	·18	4 N	21	·71
S 13	·02	7 O	12	·55	2 N	11	·08	3 D	10	·61
S 1	·39	4 S	30	·92	6 O	30	·45	7 N	28	·98
Au 21	·75	2 S	20	·29	3 O	19	·82	5 N	18	·35
S 9	·65	1 O	9	·18	2 N	7	·71	4 D	7 O	·24
Au 30	·02	5 S	28	·55	7 O	28	·08	1 N	26 O	·61
Au 18	·39	4 O	16	·45	5 N	14 O	·98	7 D	14	·51
S 16	·92									
S 6	·28	1 O	5	·81	3 N	4	·35	4 D	3	·88
Au 26	·65	6 S	25 O	·18	7 O	24	·71	2 N	23	·24

TABLE X.

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom col. 6		☉'s Anom col. 7		+ 29°53059		+ 59°06117		+ 88°59176		+ 118°12236						
									☾'s Anom col. 7		+ 1°976		+ 3°952		+ 5°928		+ 7°904								
									Vaisakha	Jyeshtha	Ashada	Shravana	Bhadrapada												
									Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	
3180	136	1	15 M	·4249	5·9408	24·455	79	6	1 Mr	21○	·36	2 Ap	19	·90	4 My	19	·43	{ 5 Je 17 ·96 7 Jl 17 ·49	2 Au	16					
3181	137	2	14 M	·6836	24·5796	22·588	80	7	7 Ap	8	·26	1 My	7	·79	3 Je	6	·32	4 Jl	5	·85	6 Au	4			
3182	138	3	14 M	·9424	13·6879	18·745	81	2	4 Mr	28	·63	6 Ap	27	·16	7 My	26	·69	2 Je	25	·22	3 Jl	24			
3183	139	4	15 M	·2011	2·7962	14·902	82	3	2 Mr	18	·00	{ 3 Ap 16 ·53 5 My 16 ·06	6 Je	14	·59	1 Jl	14○	·12	2 Au	12●					
3184	140	5	15 M	·4599	21·4351	13·036	83	4	7 Ap	5	·89	2 My	5	·43	3 Je	3	·96	5 Jl	3○	·49	7 Au	2●			
3185	141	6	14 M	·7186	10·5434	9·193	84	5	5 Mr	25	·26	6 Ap	23	·79	1 My	23	·32	2 Je	21○	·85	4 Jl	21			
3186	142	7	14 M	·9774	29·1823	7·326	85	7	4 Ap	13	·16	5 My	12○	·69	7 Je	11●	·22	1 Jl	10	·75	3 Au	9			
3187	143	8	15 M	·2362	18·2906	3·483	86	1	1 Ap	2	·53	3 My	2○	·06	4 My	31●	·59	6 Je	30	·12	7 Jl	29			
3188	144	9	15 M	·4949	7·3989	27·195	87	2	5 Mr	22	·89	7 Ap	21○	·42	1 My	20	·95	{ 3 Je 19 ·48 5 Jl 19 ·02	6 Au	17					
3189	145	10	14 M	·7537	26·0378	25·328	88	3	4 Ap	9●	·79	6 My	9	·32	7 Je	7	·85	2 Jl	7	·38	3 Au	5			
3190	146	11	15 M	·0124	15·1461	21·486	89	5	2 Mr	30●	·16	3 Ap	28	·69	5 My	28	·22	6 Je	26	·75	1 Jl	26			
3191	147	12	15 M	·2712	4·2544	17·643	90	6	6 Mr	19●	·52	1 Ap	18	·06	{ 2 My 17 ·59 4 Je 16 ·12	5 Jl	15	·65	7 Au	14○					
3192	148	13	15 M	·5299	22·8933	15·776	91	7	5 Ap	7	·42	6 My	6	·95	1 Je	5	·48	3 Jl	5	·01	4 Au	3○			
3193	149	14	14 M	·7887	12·0016	11·933	92	1	2 Mr	26	·79	4 Ap	25	·32	5 My	24	·85	7 Je	23	·38	1 Jl	22●			
3194	150	15	15 M	·0474	1·1099	8·091	93	3	{ 7 Mr 16 ·16 1 Ap 14 ·69	3 My	14	·22	4 Je	12○	·75	6 Jl	12	·28	7 Au	10					
3195	151	16	15 M	·3062	19·7488	6·224	94	4	6 Ap	4	·05	7 My	3	·58	2 Je	2●	·12	3 Jl	1	·65	5 Jl	31			
3196	152	17	15 M	·5650	8·8571	2·381	95	5	3 Mr	24	·42	4 Ap	22	·95	6 My	22●	·48	1 Je	21	·01	{ 2 Jl 20 4 Au 19				
3197	153	18	14 M	·8237	27·4959	0·514	96	6	2 Ap	11	·32	3 My	10●	·85	5 Je	9	·38	6 Jl	8	·91	1 Au	7			
3198	154	19	15 M	·0825	16·6042	24·226	97	1	6 Mr	31●	·69	1 Ap	30	·22	2 My	29	·75	4 Je	28	·28	5 Jl	27			
3199	155	20	15 M	·3412	5·7125	20·383	98	2	4 Mr	21●	·05	5 Ap	19	·58	7 My	19	·11	{ 1 Je 17 ·64 3 Jl 17 ·18	4 Au	15					
3200	156	21	15 M	·6000	24·3514	18·517	99	8	2 Ap	8	·95	4 My	8	·48	6 Je	7	·01	7 Jl	6	·54	2 Au	5			
3201	157	22	14 M	·8587	13·4597	14·674	100	4	7 Mr	28	·32	1 Ap	26	·85	3 My	26	·38	4 Je	24	·91	6 Jl	24○			
3202	158	23	15 M	·1175	2·5680	10·831	101	6	4 Mr	17	·68	{ 6 Ap 16 ·22 7 My 15 ·75	2 Je	14	·28	3 Jl	13○	·81	5 Au	12●					
3203	159	24	15 M	·8763	21·2069	8·964	102	7	3 Ap	5	·58	5 My	5	·11	6 Je	3	·64	1 Jl	3○	·17	2 Au	1			
3204	160	25	15 M	·6350	10·3152	5·122	103	7	7 Mr	25	·95	2 Ap	24	·48	4 My	24	·01	5 Je	22●	·54	7 Jl	22			
3205	161	26	14 M	·8938	28·9541	3·255	104	2	6 Ap	12	·85	1 My	12○	·38	2 Je	10●	·91	4 Jl	10	·44	5 Au	8			
3206	162	27	15 M	·1525	18·0624	26·967	105	4	4 Ap	2	·21	5 My	1○	·74	7 My	31	·28	1 Je	29	·81	3 Jl	29			
3207	163	28	15 M	·4113	7·1707	23·124	106	5	1 Mr	22	·58	3 Ap	21●	·11	4 My	20	·64	{ 6 Je 19 ·17 7 Jl 18 ·70	2 Au	17					
3208	164	29	15 M	·6700	25·8096	21·257	107	6	7 Ap	10●	·48	2 My	10	·01	3 Je	8	·54	5 Jl	8	·07	6 Au	6			
3209	165	30	14 M	·9288	14·9179	17·415	108	7	4 Mr	29●	·85	6 Ap	28	·38	7 My	27	·91	2 Je	26	·44	3 Jl	25			
3210	166	31	15 M	·1876	4·0262	13·572	109	2	2 Mr	19	·21	3 Ap	17	·74	{ 5 My 17 ·27 6 Je 15 ·80	1 Jl	15	·34	2 Au	13○					
3211	167	32	15 M	·4463	22·6651	11·705	110	3	1 Ap	7	·11	2 My	6	·64	4 Je	5	·17	5 Jl	4	·70	7 Au	3●			
3212	168	33	15 M	·7051	11·7738	7·862	111	4	5 Mr	27	·48	7 Ap	26	·01	1 My	25	·54	3 Je	24○	·07	4 Jl	23			
3213	169	34	14 M	·9638	0·8817	4·020	112	5	{ 2 Mr 15 ·84 4 Ap 14 ·38	5 My	13	·91	7 Je	12●	·44	1 Jl	11	·97	3 Au	10					
3214	170	35	15 M	·2226	19·5206	2·153	113	7	1 Ap	3	·74	3 My	3	·27	4 Je	1○	·80	6 Jl	1	·33	7 Jl	30			
3215	171	36	15 M	·4813	8·6289	25·865	114	1	6 Mr	24	·11	7 Ap	22	·64	2 My	22●	·17	3 Je	20	·70	{ 5 Jl 20 6 Au 18				
3216	172	37	15 M	·7401	27·2677	23·998	115	2	5 Ap	12○	·01	6 My	11	·54	1 Je	10	·07	2 Jl	9	·60	4 Au	8			
3217	173	38	14 M	·9988	16·3760	20·155	116	3	2 Mr	31○	·37	3 Ap	29	·90	5 My	29	·44	6 Je	27	·97	1 Jl	27			
3218	174	39	15 M	·2576	5·4843	16·312	117	5	6 Mr	20●	·74	1 Ap	19	·27	2 My	18	·80	{ 4 Je 17 ·33 5 Jl 16 ·86	7 Au	15					

17-65293	+ 177-18353	+ 206-71411	+ 236-24470	+ 265-77529	+ 295-30558	+ 324-83647															
9-880	+ 11-856	+ 13-832	+ 15-808	+ 17-784	+ 19-760	+ 354-36705															
						+ 21-736															
						+ 23-712															
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra													
Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction				
14	55	5 O	14	08	6 N	12	61	1 D	12	14	80	2 Jr	10	67	4 F	9	20	5 Mr	9	73	
20	92	2 O	2	45	3 O	31	98	5 N	30	51		7 D	30	04	81	1 Jr	28	57	3 F	27	10
23	28	6 S	21	81	1 O	21	34	2 N	19	87		4 D	19	41	82	5 Jr	17	94	7 F	16	47
11	18	5 O	10	71	7 N	9	24	1 D	8	77	83	3 Jr	7	30		4 F	5	83	6 Mr	7	36
31	55	3 S	30	08	4 O	29	61	6 N	28	14		7 D	27	67	84	2 Jr	26	20	3 F	24	73
19	91	7 S	18	45	1 O	17	98	3 N	16	51		5 D	16	04	85	6 Jr	14	57	1 F	13	10
7	81	6 O	7	34	7 N	5	87	2 D	5	40	86	3 Jr	3	93		5 F	2	46	2 Mr	14	63
28	18	3 S	26	71	5 O	26	24	6 N	24	77		1 D	24	30	87	2 Jr	22	83	4 F	21	00
16	08	2 O	15	61	4 N	14	14	5 D	13	67	88	7 Jr	12	20		1 F	10	73	3 Mr	11	26
4	44	6 O	3	97	1 N	2	50	3 D	2	04		4 D	31	57	89	6 Jr	30	10	7 F	28	63
24	81	4 S	23	34	5 O	22	87	7 N	21	40		1 D	20	93	90	3 Jr	19	46	4 F	17	99
12	71	3 O	12	24	4 N	10	77	6 D	10	30	91	7 Jr	8	83		2 F	7	36	3 Mr	8	89
2	08	7 O	1	61	2 O	31	14	3 N	29	67		5 D	29	20	92	6 Jr	27	73	1 F	26	26
21	44	4 S	19	97	6 O	19	50	1 N	18	03		2 D	17	56	93	4 Jr	16	10	5 F	14	63
9	34	3 O	8	87	5 N	7	40	6 D	6	93	94	1 Jr	5	46		2 F	3	99	4 Mr	5	52
29	71	1 S	28	24	2 O	27	77	4 N	26	30		5 D	25	83	95	7 Jr	24	36	1 F	22	89
17	60	7 O	17	14	1 N	15	67	3 D	15	20	96	4 Jr	13	73		6 F	12	26	7 Mr	12	79
5	97	4 O	5	50	6 N	4	03	7 D	3	56	97	2 Jr	2	09		3 Jr	31	62	5 Mr	2	16
26	34	1 S	24	87	3 O	24	40	4 N	22	93		6 D	22	46	98	7 Jr	20	99	2 F	19	52
14	24	7 O	13	77	2 N	12	30	3 D	11	83	99	5 Jr	10	36		6 F	8	89	1 Mr	10	42
3	60	5 O	3	13	6 N	1	66	1 D	1	20		2 D	30	73	100	4 Jr	29	26	5 F	27	79
22	97	2 S	21	50	4 O	21	03	5 N	19	56		7 D	19	09	01	1 Jr	17	62	3 F	16	15
10	87	1 O	10	40	2 N	8	93	4 D	8	46	02	5 Jr	6	99		7 F	5	52	2 Mr	7	05
31	24	5 S	29	77	7 O	29	30	1 N	27	83		3 D	27	36	03	4 Jr	25	89	6 F	24	42
20	60	3 S	19	13	4 O	18	66	6 N	17	19		7 D	16	72	04	2 Jr	15	26	3 F	13	79
7	50	2 O	7	03	3 N	5	56	5 D	5	09	05	6 Jr	3	62		1 F	2	15	2 Mr	3	68
27	87	6 S	26	40	7 O	25	93	2 N	24	46		3 D	23	99	06	5 Jr	22	52	7 F	21	05
15	76	5 O	15	30	6 N	13	83	1 D	13	36	07	2 Jr	11	89		4 F	10	42	5 Mr	11	95
5	13	2 O	4	66	4 N	3	19	5 D	2	72	08	7 Jr	1	25		1 Jr	30	78	3 F	29	32
24	50	7 S	23	03	1 O	22	56	3 N	21	09		4 D	20	62	09	6 Jr	19	15	7 F	17	68
12	40	5 O	11	93	7 N	10	46	1 D	9	99	10	3 Jr	8	52		5 F	7	05	6 Mr	8	58
1	76	3 O	1	29	4 O	30	82	6 N	29	36		7 D	28	89	11	2 Jr	27	42	3 F	25	95
22	13	7 S	20	66	2 O	20	19	3 N	18	72		5 D	18	25	12	6 Jr	16	78	1 F	15	31
9	03	6 O	8	56	1 N	7	09	2 D	6	62	13	4 Jr	5	15		5 F	3	68	7 Mr	5	21
29	40	3 S	27	93	5 O	27	46	6 N	25	99		1 D	25	52	14	3 Jr	24	05	4 F	22	58
17	29	2 O	16	82	4 N	15	35	5 D	14	88	15	7 Jr	13	42		1 F	11	95	3 Mr	13	48
6	66	7 O	6	19	1 N	4	72	3 D	4	25	16	4 Jr	2	78		6 F	1	31	7 Mr	1	84
26	03	4 S	24	56	6 O	24	09	7 N	22	62		2 D	22	15	17	3 Jr	20	68	5 F	19	21
13	92	3 O	13	46	4 N	11	99	6 D	11	52	18	1 Jr	10	05		2 F	8	58	4 Mr	10	10

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.			☉'s Anom col. 6			☌'s Anom col. 7			+ 29°53059			+ 59°06117			+ 88°59176			+ 118°122				
								Yaisakha			Jyeshtha			Ashada			Sravana			Bhadrapa										
								Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day
3219	175	40	15M	·5164	24·1232	14·446	118	6	5	Ap	8	·64	7	My	8	·17	1	Je	6	·70	3	Jl	6	·23	4	Au	40			
3220	176	41	15M	·7751	13·2315	10·603	119	7	3	Mr	29	·01	4	Ap	27	·54	6	My	27	·07	7	Je	25	·60	2	Jl	25			
3221	177	42	15M	·0339	2·3398	6·760	120	1	7	Mr	17	·37	1	Ap	15	·90	4	Je	13	·96	6	Jl	13	·50	1	Au	12			
													3	My	15	·43														
3222	178	43	15M	·2926	20·9787	4·893	121	3	6	Ap	5	·27	7	My	4	·80	2	Je	3	·33	3	Jl	2	·86	5	Au	1			
3223	179	44	15M	·5514	10·0870	1·051	122	4	3	Mr	25	·64	5	Ap	24	·17	6	My	23	·70	2	Jl	21	·76	4	Au	20			
													1	Je	22	·23														
3224	180	45	15M	·8101	28·7259	26·739	123	5	2	Ap	13	·54	4	My	13	·07	5	Je	11	·60	7	Jl	11	·13	1	Au	9			
3225	181	46	15M	·0689	17·8342	22·896	124	6	6	Ap	1	·90	1	My	1	·43	2	My	30	·96	4	Je	29	·49	6	Jl	29			
3226	182	47	15M	·3277	6·9425	19·053	125	1	4	Mr	22	·28	5	Ap	20	·80	7	My	20	·33	1	Je	18	·86	4	Au	16			
													3	Jl	18	·39														
3227	183	48	15M	·5864	25·5814	17·176	126	2	3	Ap	10	·17	4	My	9	·70	6	Je	8	·23	7	Jl	7	·76	2	Au	6			
3228	184	49	15M	·8452	14·6897	13·344	127	3	7	Mr	30	·53	2	Ap	29	·06	3	My	28	·60	5	Je	27	·13	6	Jl	26			
3229	185	50	15M	·1039	3·7980	9·501	128	4	4	Mr	18	·90	6	Ap	17	·43	7	My	16	·96	4	Jl	15	·02	5	Au	13			
													2	Je	15	·49														
3230	186	51	15M	·3627	22·4369	7·634	129	6	3	Ap	6	·80	5	My	6	·33	6	Je	4	·86	1	Jl	4	·39	2	Au	2			
3231	187	52	15M	·6214	11·5452	3·791	130	7	1	Mr	27	·17	2	Ap	25	·70	4	My	25	·23	5	Je	23	·76	7	Jl	23			
3232	188	53	15M	·8802	0·6535	27·503	131	1	5	Mr	16	·53	1	My	14	·59	3	Je	13	·12	4	Jl	12	·66	6	Au	11			
													7	Ap	15	·06														
3233	189	54	15M	·1389	19·2923	25·636	132	2	4	Ap	3	·43	5	My	2	·96	7	Je	1	·49	2	Jl	1	·02	3	Jl	30			
3234	190	55	15M	·3977	8·4006	21·794	133	4	1	Mr	23	·80	3	Ap	22	·33	4	My	21	·86	6	Je	20	·39	7	Jl	19			
													2	Au	18															
3235	191	56	15M	·6565	27·0395	19·927	134	5	7	Ap	11	·70	2	My	11	·23	3	Je	9	·76	5	Jl	9	·29	6	Au	7			
3236	192	57	15M	·9152	16·1478	16·084	135	6	5	Ap	1	·06	6	Ap	30	·59	1	My	30	·12	2	Je	28	·65	4	Jl	28			
3237	193	58	15M	·1740	5·2561	12·241	136	7	2	Mr	20	·43	3	Ap	18	·96	5	My	18	·49	7	Je	17	·02	3	Au	15			
													1	Jl	16	·55														
3238	194	59	15M	·4327	23·8950	10·375	137	2	1	Ap	8	·33	2	My	7	·86	4	Je	6	·39	5	Jl	5	·92	7	Au	4			
3239	195	60	15M	·6915	13·0083	6·532	138	3	5	Mr	28	·69	7	Ap	27	·22	1	My	26	·76	3	Je	25	·29	4	Jl	24			
3240	196	61	15M	·9502	2·1116	2·689	139	4	3	Mr	18	·06	4	Ap	16	·59	7	Je	14	·65	2	Jl	14	·18	3	Au	12			
													6	My	16	·12														
3241	197	62	15M	·2090	20·7505	0·822	140	5	1	Ap	4	·96	3	My	4	·49	5	Je	3	·02	6	Jl	2	·55	1	Au	1			
3242	198	63	15M	·4678	9·8589	24·534	141	7	6	Mr	25	·33	7	Ap	23	·86	2	My	23	·39	3	Je	21	·92	5	Jl	21			
													6	My	12	·75														
3243	199	64	15M	·7265	28·4977	22·667	142	1	5	Ap	13	·22	6	My	12	·75	1	Je	11	·28	2	Jl	10	·82	4	Au	9			
3244	200	65	15M	·9853	17·6060	18·825	143	2	2	Ap	20	·59	4	My	2	·12	5	My	31	·65	7	Je	30	·18	1	Jl	29			
3245	201	66	15M	·2440	6·7148	14·982	144	3	6	Mr	21	·96	1	Ap	20	·49	3	My	20	·02	4	Je	18	·55	7	Au	16			
													6	Jl	18	·08														
3246	202	67	15M	·5028	25·3532	13·115	145	5	5	Ap	9	·86	7	My	9	·39	1	Je	7	·92	3	Jl	7	·45	4	Au	5			
3247	203	68	15M	·7615	14·4615	9·272	146	6	3	Mr	30	·22	4	Ap	28	·75	6	My	28	·28	7	Je	26	·81	2	Jl	26			
3248	204	69	16M	·0203	3·5698	5·430	147	7	7	Mr	19	·59	2	Ap	18	·12	5	Je	16	·18	6	Jl	15	·71	1	Au	14			
													3	My	17	·65														
3249	205	70	15M	·2791	22·2087	3·563	148	1	6	Ap	6	·49	1	My	6	·02	2	Je	4	·55	4	Jl	4	·08	5	Au	2			
3250	206	71	15M	·5378	11·3170	27·275	149	3	3	Mr	26	·85	5	Ap	25	·38	6	My	24	·92	1	Je	23	·45	2	Jl	22			
3251	207	72	15M	·7966	0·4253	23·432	150	4	1	Mr	16	·22	4	My	14	·28	5	Je	12	·81	7	Jl	12	·34	1	Au	10			
													2	Ap	14	·75														
3252	208	73	16M	·0553	19·0641	21																								

rya Siddhanta.

147·65293	+ 177·18353	+ 206·71411	+ 236·24470		+ 265·77529		+ 295·34588	{ + 324·83647														
9·880	+ 11·856	+ 13·832	+ 15·808		+ 17·784		+ 19·760	+ 354·36705														
								+ 21·736														
								+ 23·712														
Asvina		Kartika		Margasira		Pausha		A.D.	Magha		A.D.	Phalguna		Chaitra								
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction				
S	3●	·29	7 O	2	·82	2 N	1	·35	3 N	30	·88		5 D	30	·41	19	6 Jr	28○	·94	1 F	27	·48
Au	23	·66	5 S	22	·19	6 O	21	·72	1 N	20	·25		2 D	19	·78	20	4 Jr	18●	·31	5 F	16	·84
S	10	·56	4 O	10	·09	5 N	8	·62	7 D	8	·15	21	1 Jr	6	·68		3 F	5	·21	4 Mr	6	·74
Au	30	·92	1 S	29	·45	2 O	28	·98	4 N	27○	·52		6 D	27	·05	22	7 Jr	25	·58	2 F	24	·11
S	18	·82	7 O	18	·35	Margasira Kshaya.			1 N	16○	·88		3 D	16	·41	23	4 Jr	14	·94	{ 6 F	13	·47
S	8	·19	4 O	7	·72	6 N	6●	·25	7 D	5	·78	24	2 Jr	4	·31		3 F	2	·84	1 Mr	15	·00
Au	27	·56	2 S	26	·09	3 O	25●	·62	5 N	24	·15		6 D	23	·68	25	1 Jr	22	·21	5 Mr	3	·37
S	15○	·45	7 O	14	·98	2 N	13	·51	4 D	13	·04	26	5 Jr	11	·58		7 F	10	·11	2 F	20	·74
S	4●	·82	5 O	4	·35	6 N	2	·88	1 D	2	·41		2 D	31	·94	27	4 Jr	30	·47	1 Mr	11○	·64
Au	25●	·19	2 S	23	·72	4 O	23	·25	5 N	21	·78		7 D	21	·31	28	1 Jr	19	·84	6 Mr	1○	·00
S	12	·08	1 O	11	·62	3 N	10	·15	4 D	9	·68	29	6 Jr	8○	·21		7 F	6●	·74	3 F	18	·37
S	1	·45	5 S	30	·98	7 O	30	·51	2 N	29	·04		3 D	28○	·57	30	5 Jr	27●	·10	2 Mr	8	·27
Au	21	·82	3 S	20	·35	4 O	19	·88	6 N	18	·41		7 D	17○	·94	31	2 Jr	16	·47	6 F	25	·64
S	9	·72	2 O	9	·25	3 N	7	·78	5 D	7	·31	32	6 Jr	5	·84		1 F	4	·37	4 F	15	·00
Au	29	·08	6 S	27	·61	1 O	27○	·14	2 N	25●	·68		4 D	25	·21	33	5 Jr	23	·74	2 Mr	4	·90
S	16	·98	5 O	16○	·51	7 N	15●	·04	1 D	14	·57	34	3 Jr	13	·10		4 F	11	·63	7 F	22	·27
S	6	·35	2 O	5○	·88	4 N	4	·41	5 D	3	·94	35	7 Jr	2	·47		2 F	1	·00	6 Mr	13	·16
Au	26	·72	7 S	25●	·25	1 O	24	·78	3 N	23	·31		4 D	22	·84	36	6 Jr	21	·37	3 Mr	2	·53
S	13●	·61	6 O	13	·14	7 N	11	·67	2 D	11	·20	37	3 Jr	9	·74		5 F	8○	·27	7 F	19○	·90
S	2●	·98	3 O	2	·51	5 N	1	·04	6 N	30	·57		1 D	30	·10	38	2 Jr	28○	·63	6 Mr	9	·80
Au	23	·35	7 S	21	·88	2 O	21	·41	3 N	19	·94		5 D	19	·47	39	7 Jr	18●	·00	4 F	27	·16
S	11	·24	6 O	10	·78	1 N	9	·31	2 D	8○	·84	40	4 Jr	7	·37		5 F	5	·90	1 F	16	·53
Au	30	·61	4 S	29	·14	5 O	28	·67	7 N	27○	·20		1 D	26	·73	41	3 Jr	25	·26	7 Mr	6	·43
Au	19	·98	3 O	18	·04	Margasira Kshaya.			4 N	16●	·57		6 D	16	·10	42	7 Jr	14	·63	4 F	23	·80
S	18	·51				1 N	5●	·94	3 D	5	·47	43	5 Jr	4	·00		2 F	1	·00	3 Mr	14	·69
S	7	·88	7 O	7	·41	6 O	26	·30	7 N	24	·84		2 D	24	·37	44	6 F	2	·53	1 Mr	4	·06
Au	28	·24	4 S	26○	·77	5 N	13	·20	6 D	12	·73	45	1 Jr	11	·26		3 Jr	22	·90	5 F	21	·43
S	15○	·14	3 O	14	·67								2 F	9	·79		4 Mr	11○	·32			
S	4●	·51	1 O	4	·04	2 N	2	·57	4 D	2	·10		5 D	31	·63	46	7 Jr	30	·16	4 F	23	·80
Au	24●	·88	5 S	23	·41	6 O	22	·94	1 N	21	·47		3 D	21	·00	47	4 Jr	19○	·53	6 F	18●	·06
S	12	·77	4 O	12	·30	5 N	10	·83	7 D	10	·36	48	1 Jr	8○	·90		3 F	7●	·43	4 Mr	7	·96
S	1	·14	1 S	30	·67	3 O	30	·20	4 N	28	·73		6 D	28○	·26	49	7 Jr	26	·79	2 F	25	·32
Au	21	·51	7 S	20	·04	7 O	19	·57	2 N	18	·10		3 D	17	·63	50	5 Jr	16	·16	6 F	14	·69
S	9	·40	4 O	8	·94	6 N	7○	·47	1 D	7●	·00	51	2 Jr	5	·53		4 F	4	·06	5 Mr	5	·59
Au	29	·77	2 S	28	·30	3 O	27○	·83	5 N	26●	·36		6 D	25	·89	52	1 Jr	24	·42	2 F	22	·96
S	16	·67	1 O	16○	·20	2 N	14	·73	4 D	14	·26	53	5 Jr	12	·79		7 F	11	·32	1 Mr	12	·85
S	6	·04	5 O	5	·57	7 N	4	·10	1 D	3	·63	54	3 Jr	2	·16		4 Jr	31	·69	6 Mr	2○	·22
Au	26○	·40	2 S	24●	·93	4 O	24	·46	6 N	23	·00		7 D	22	·53	55	2 Jr	21	·06	3 F	19○	·59
S	11●	·30	1 O	13	·83	3 N	12	·36	4 D	11	·89	56	6 Jr	10	·42		7 F	8●	·95	2 Mr	9	·48
S	2	·67	6 O	2	·20	7 O	31	·73	2 N	30	·26		3 D	29	·79	57	5 Jr	28●	·32	6 F	26	·85
Au	23	·04	3 S	21	·57	5 O	21	·10	6 N	19	·63		1 D	19○	·16	58	2 Jr	17	·69	4 F	16	·22

TABLE X.

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom col. 6					☾'s Anom col. 7					☉'s Anom col. 6					☾'s Anom col. 7					☉'s Anom col. 6					☾'s Anom col. 7														
								+ 29.53059					+ 59.06117					+ 88.59176					+ 118.12135					+ 29.53059					+ 59.06117					+ 88.59176					+ 118.12135				
								+ 1.976					+ 3.952					+ 5.928					+ 7.904					+ 1.976					+ 3.952					+ 5.928					+ 7.904				
								Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapad																							
								Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month.	Day	Fraction.	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction																
3259	215	80	15M	8666	1.8834	26.173	158 7	5	Mr	17	.75	{	7	Ap	16	.28	3	Je	14	○	.34	4	Jl	13	●	.87	6	Au	12	.4																	
3260	216	81	16M	1254	20.5223	24.306	159 1	4	Ap	5	.65	{	1	My	15	.81	7	Je	3	○	.71	2	Jl	3	.24	3	Au	1	.7																		
3261	217	82	15M	3841	9.6306	20.463	160 2	2	Mr	25	.01	3	Ap	23	.54	5	My	23	●	.07	6	Je	21	.61	1	Jl	21	.1																			
3262	218	83	15M	6429	28.2695	18.596	161 4	7	Ap	12	.91	2	My	12	●	.44	3	Je	10	.97	5	Jl	10	.50	7	Au	9	.0																			
3263	219	84	15M	9016	17.3778	14.754	162 5	5	Ap	2	○	.28	6	My	1	●	.81	1	My	31	.34	2	Je	29	.87	4	Jl	29	.4																		
3264	220	85	16M	1604	6.4861	10.911	163 6	2	Mr	22	○	.65	4	Ap	21	.18	5	My	20	.71	{	7	Je	19	.24	3	Au	17	.3																		
3265	221	86	15M	4192	25.1250	9.044	164 7	1	Ap	9	.54	3	My	9	.07	4	Je	7	.60	6	Jl	7	.14	7	Au	5	.6																				
3266	222	87	15M	6779	14.2333	5.201	165 2	5	Mr	29	.91	7	Ap	28	.44	1	My	27	.97	3	Je	26	.50	5	Jl	26	○	.0																			
3267	223	88	15M	9367	3.3416	1.359	166 3	3	Mr	19	.28	{	4	Ap	17	.81	7	Je	15	.87	2	Jl	15	○	.40	3	Au	13	.9																		
3268	224	89	16M	1954	21.9805	27.047	167 4	2	Ap	7	.18	3	My	6	.71	5	Je	5	.24	6	Jl	4	○	.77	1	Au	3	.3																			
3269	225	90	15M	4542	11.0888	23.204	168 5	6	Mr	26	.54	1	Ap	25	.07	2	My	24	.60	4	Je	23	●	.13	5	Jl	22	.6																			
3270	226	91	15M	7129	0.1971	19.361	169 7	{	3	Mr	15	.91	6	My	13	○	.97	1	Je	12	.50	3	Jl	12	.03	4	Au	10	.5																		
3271	227	92	15M	9717	18.8359	17.494	170 1	2	Ap	3	.81	4	My	3	○	.34	5	Je	1	.87	7	Jl	1	.40	1	Jl	30	.9																			
3272	228	93	16M	2305	7.9442	13.652	171 2	7	Mr	24	.17	1	Ap	22	○	.70	3	My	22	.24	4	Je	20	.77	{	6	Jl	20	.3																		
3273	229	94	15M	4892	26.5831	11.785	172 3	6	Ap	11	.07	7	My	10	.60	2	Je	9	.13	3	Jl	8	.66	5	Au	7	.1																				
3274	230	95	15M	7480	15.6914	7.942	173 5	3	Mr	31	.44	4	Ap	29	.97	6	My	29	.50	1	Je	28	.03	2	Jl	27	.5																				
3275	231	96	16M	0067	4.7997	4.099	174 6	7	Mr	20	.81	2	Ap	19	.34	{	3	My	18	.87	6	Jl	16	.93	1	Au	15	○	.4																		
3276	232	97	16M	2655	23.4386	2.233	175 7	6	Ap	8	.70	1	My	8	.23	2	Je	6	.76	4	Jl	6	.30	5	Au	4	●	.8																			
3277	233	98	15M	5242	12.5469	25.945	176 1	4	Mr	28	.07	5	Ap	26	.60	7	My	26	.13	1	Je	24	○	.66	3	Jl	24	●	.1																		
3278	234	99	15M	7830	1.6552	22.102	177 3	1	Mr	17	.44	{	2	Ap	15	.97	6	Je	14	○	.03	7	Jl	13	●	.56	2	Au	12	.0																	
3279	235	100	16M	0417	20.2941	20.235	178 4	7	Ap	5	.34	1	My	4	.87	3	Je	3	○	.40	4	Jl	2	.93	6	Au	1	.4																			
3280	236	101	16M	3005	9.4024	16.392	179 5	4	Mr	25	.70	6	Ap	24	.23	7	My	23	●	.76	2	Je	22	.29	3	Jl	21	.8																			
3281	237	102	15M	5593	28.0413	14.526	180 6	3	Ap	12	○	.60	5	My	12	●	.13	6	Je	10	.66	1	Jl	10	.19	2	Au	8	.7																		
3282	238	103	15M	8180	17.1496	10.683	181 1	7	Ap	1	○	.97	2	My	1	.50	4	My	31	.03	5	Je	29	.56	7	Jl	29	.0																			
3283	239	104	16M	0768	6.2579	6.840	182 2	5	Mr	22	.33	6	Ap	20	.86	1	My	20	.40	{	2	Je	18	.93	5	Au	16	.9																			
3284	240	105	16M	3355	24.8968	4.973	183 3	4	Ap	10	.23	5	My	9	.76	7	Je	8	.29	1	Jl	7	.82	3	Au	6	○	.3																			
3285	241	106	15M	5943	14.0051	1.130	184 4	1	Mr	29	.60	3	Ap	28	.13	4	My	27	.66	6	Je	26	.19	7	Jl	25	○	.7																			
3286	242	107	15M	8530	3.1134	24.842	185 6	5	Mr	18	.97	{	7	Ap	17	.50	3	Je	15	.56	5	Jl	15	○	.09	6	Au	13	.6																		
3287	243	108	16M	1118	21.7522	22.976	186 7	4	Ap	6	.86	6	My	6	.39	7	Je	4	.92	2	Jl	4	●	.46	3	Au	2	.9																			
3288	244	109	16M	3706	10.8605	19.133	187 1	2	Mr	27	.23	3	Ap	25	.76	5	My	25	○	.29	6	Je	23	.82	1	Jl	23	.3																			
3289	245	110	15M	6293	29.4994	17.266	188 2	{	6	Mr	15	.60	2	My	13	○	.66	4	Je	12	.19	5	Jl	11	.72	7	Au	10	.2																		
3290	246	111	15M	8881	18.6077	13.423	189 4	1	Ap	14	.13	5	Ap	3	.50	7	My	3	○	.03	1	Je	1	.56	3	Jl	30	.6																			
3291	247	112	16M	1468	7.7160	9.581	190 5	2	Mr	23	○	.86	4	Ap	22	●	.39	5	My	21	.92	7	Je	20	.45	{	1	Jl	19	.9																	
3292	248	113	16M	4056	26.3549	7.714	191 6	1	Ap	11	.76	3	My	11	.29	4	Je	9	.82	6	Jl	9	.35	7	Au	7	.8																				
3293	249	114	15M	6643	15.4632	3.871	192 7	6	Mr	31	.13	7	Ap	29	.66	2	My	29	.19	3	Je	27	.72	5	Jl	27	.2																				
3294	250	115	15M	9231	4.5715	0.028	193 2	3	Mr	20	.49	5	Ap	19	.02	{	6	My	18	.56	2	Jl	16	.62	4	Au	15	.1																			
3295	251	116	16M	1819	23.2104	25.716	194 3	2	Ap	8	.39	3	My	7	.92	5	Je	6	.45	6	Jl	5	○	.98	1	Au	4	●	.5																		
3296	252	117	16M	4406	12.3187	21.873	195 4	6	Mr	28	.76	1	Ap	27	.29	2	My	26	.82	4	Je	25	○	.35	5	Jl	24	●	.8																		
3297	253	118	15M	6994	1.4270	18.031	196 5	4	Mr	17	.13	{	5	Ap	15	.66	1	Je	13	○	.72	3	Jl	13	.25	4	Au	11	.7																		
												{	7	My	15	.19																															

Surya Siddhanta.

+ 147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·30588	{ + 324·83647 + 354·36705																
+ 9·880	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760	{ + 21·736 + 23·712																
Asvina	Kartika	Margasira	Pausa	A.D.	Magha	A.D.	Phalguna	Chaitra														
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction				
7 S	10	·93	2 O	10	·46	3 N	8	·99	5 D	80	·52	59	7 Jr	7	·06		1 F	5	·59	3 Mr	7	·12
5 Au	31	·30	6 S	29	·83	1 O	29	·36	2 N	270	·89		4 D	27	·42	60	5 Jr	25	·95	7 F	24	·84
2 Au	19	·67	5 O	17	·73	7 N	16	·26	1 D	15	·79	61	3 Jr	14	·32		4 F	12	·85	6 Mr	14	·38
4 S	18	·20																				
1 S	7	·56	3 O	70	·10	4 N	5	·63	6 D	5	·16	62	7 Jr	3	·69		2 F	2	·22	3 Mr	3	·75
5 Au	27	·93	7 S	260	·46	1 O	25	·99	3 N	24	·52		5 D	24	·05	63	6 Jr	22	·58	1 F	21	·12
4 S	150	·83	6 O	15	·36	7 N	13	·89	2 D	13	·42	64	3 Jr	11	·95		5 F	10	·48	7 Mr	11	·01
2 S	4	·20	3 O	3	·73	5 N	2	·26	6 D	1	·79		1 D	31	·32	65	2 Jr	290	·85	4 F	28	·38
6 Au	24	·56	1 S	23	·09	2 O	22	·62	4 N	21	·15		5 D	20	·69	66	4 Jr	190	·22	1 F	17	·75
5 S	12	·46	6 O	11	·99	1 N	10	·52	3 D	10	·05	67	4 Jr	80	·58		6 F	7	·11	7 Mr	8	·64
2 S	1	·83	4 O	1	·36	5 O	30	·89	7 N	29	·42		1 D	28	·95	68	3 Jr	27	·48	5 F	26	·01
7 Au	21	·20	1 S	19	·73	3 O	19	·26	4 N	170	·79		6 D	17	·32	69	7 Jr	15	·85	2 F	14	·38
6 S	9	·09	7 O	8	·62	2 N	70	·15	3 D	6	·68	70	5 Jr	5	·22		6 F	3	·75	1 Mr	5	·28
3 Au	29	·46	4 S	27	·99	6 O	270	·52	1 N	26	·05		2 D	25	·58	71	4 Jr	24	·11	5 F	22	·64
2 S	17	·36	3 O	16	·89	5 N	15	·42	6 D	14	·95	72	1 Jr	13	·48		3 F	12	·01	4 Mr	120	·54
6 S	50	·72	1 O	5	·26	2 N	3	·79	4 D	3	·32	73	5 Jr	1	·85		7 Jr	31	·38	1 Mr	10	·91
4 Au	260	·09	5 S	24	·62	7 O	24	·15	1 N	22	·68		3 D	22	·21	74	4 Jr	20	·74	6 F	190	·28
2 S	13	·99	4 O	13	·52	6 N	12	·05	7 D	11	·58	75	2 Jr	10	·11		3 F	8	·64	5 Mr	10	·17
7 S	3	·36	1 O	2	·89	5 N	1	·42	4 N	30	·95		6 D	300	·48	76	1 Jr	29	·01	2 F	27	·54
4 Au	22	·72	6 S	21	·25	7 O	20	·78	2 N	19	·32		3 D	180	·85	77	5 Jr	17	·38	6 F	15	·91
3 S	10	·62	5 O	10	·15	6 N	8	·68	1 D	80	·21	78	2 Jr	6	·74		4 F	5	·27	5 Mr	6	·80
7 Au	30	·99	2 S	29	·52	4 O	29	·05	5 N	27	·58		7 D	27	·11	79	1 Jr	25	·64	3 F	24	·17
5 Au	20	·36	1 O	180	·42	2 N	16	·95	4 D	16	·48	80	6 Jr	15	·01		7 F	13	·54	2 Mr	14	·07
6 S	18	·89																				
4 S	7	·25	5 O	60	·78	7 N	5	·31	1 D	4	·84	81	3 Jr	3	·38		4 F	1	·91	6 Mr	3	·44
1 Au	27	·62	3 S	260	·15	4 O	25	·68	6 N	24	·21		7 D	23	·74	82	2 Jr	22	·27	3 F	20	·80
7 S	15	·52	2 O	15	·05	3 N	13	·58	5 D	13	·11	83	6 Jr	11	·64		1 F	100	·17	2 Mr	11	·70
4 S	4	·88	6 O	4	·42	7 N	2	·95	2 D	2	·48	84	4 Jr	1	·01		5 Jr	300	·54	7 F	29	·07
2 Au	24	·25	3 S	22	·78	5 O	22	·31	6 N	20	·84		1 D	20	·37	85	2 Jr	180	·90	4 F	17	·44
1 S	12	·15	2 O	11	·68	4 N	10	·21	5 D	9	·74	86	7 Jr	8	·27		1 F	6	·80	3 Mr	8	·33
5 S	1	·52	7 O	1	·05	1 O	30	·58	3 N	290	·11		4 D	28	·64	87	6 Jr	27	·17	7 F	25	·70
2 Au	21	·88	4 S	20	·41	5 O	19	·94	7 N	180	·48		2 D	18	·01	88	3 Jr	16	·54	5 F	15	·07
1 S	8	·78	3 O	8	·31	4 N	60	·84	6 D	6	·37	89	7 Jr	4	·90		2 F	3	·43	3 Mr	4	·96
6 Au	29	·15	7 S	27	·68	2 O	27	·21	3 N	25	·74		5 D	25	·27	90	6 Jr	23	·80	1 F	22	·33
5 S	17	·05	6 O	16	·58	1 N	15	·11	2 D	14	·64	91	4 Jr	13	·17		5 F	11	·70	7 Mr	130	·23
2 S	60	·41	3 O	5	·94	5 N	4	·47	7 D	4	·00	92	1 Jr	2	·54		3 F	1	·07	4 Mr	100	·60
6 Au	250	·78	1 S	24	·31	2 O	23	·84	4 N	22	·37		5 D	21	·90	93	7 Jr	20	·43	1 F	18	·96
5 S	13	·68	7 O	13	·21	1 N	11	·74	3 D	11	·27	94	4 Jr	90	·80		6 F	8	·33	7 Mr	9	·86
3 S	3	·04	4 O	2	·58	6 N	1	·11	7 N	30	·64		2 D	300	·17	95	3 Jr	28	·70	5 F	27	·23
7 Au	23	·41	1 S	21	·94	3 O	21	·47	5 N	20	·00		6 D	190	·53	96	1 Jr	18	·06	2 F	16	·60
6 S	10	·31	7 O	9	·84	2 N	8	·37	3 D	7	·90	97	5 Jr	6	·43		6 F	4	·96	1 Mr	6	·49

TABLE X—

Kaliyuga.	Vikrama Era.	Saka Era	Com- mence- ment of Solar Year	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada			
									Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
3298	254	119	15M	.9581	20.0659	16.164	197	7	3	Ap	5	.02	7	My	4	.55	6	Je	3	.08	7	Jl	2	.62	2	Au	1	.15
3299	255	120	16M	.2169	9.1742	12.321	198	1	7	Mr	23	.39	1	Ap	23	.92	3	My	23	.45	4	Je	21	.91	6	Jl	21	.51
3300	256	121	16M	.4756	27.8131	10.454	199	2	6	Ap	13	.29	7	My	12	.82	2	Je	11	.35	3	Jl	10	.88	5	Au	9	.41
3301	257	122	15M	.7344	16.9214	6.612	200	3	3	Ap	1	.66	5	My	1	.19	6	My	30	.72	1	Je	29	.25	2	Jl	28	.78
3302	258	123	15M	.9932	6.0297	2.769	201	5	1	Mr	22	.02	2	Ap	20	.55	4	My	20	.08	5	Je	18	.61	1	Au	16	.68
3303	259	124	16M	.2519	24.6686	0.902	202	6	6	Ap	9	.92	1	My	9	.45	2	Je	7	.98	4	Jl	7	.51	6	Au	6	.04
3304	260	125	16M	.5107	13.7769	24.614	203	7	4	Mr	30	.29	5	Ap	28	.82	7	My	28	.35	1	Je	26	.88	3	Jl	26	.41
3305	261	126	15M	.7694	2.8852	20.771	204	1	1	Mr	18	.65	3	Ap	17	.18	6	Je	15	.25	7	Jl	14	.78	2	Au	13	.31
3306	262	127	16M	.0282	21.5240	18.904	205	3	7	Ap	6	.55	2	My	6	.08	3	Je	4	.61	5	Jl	4	.14	6	Au	2	.67
3307	263	128	16M	.2869	10.6323	15.062	206	4	4	Mr	26	.92	6	Ap	25	.45	7	My	24	.98	2	Je	23	.51	4	Jl	23	.04
3308	264	129	16M	.5457	29.2712	13.195	207	5	3	Ap	14	.82	5	My	14	.35	6	Je	12	.88	1	Jl	12	.41	2	Au	10	.94
3309	265	130	15M	.8044	18.3795	9.352	208	6	1	Ap	3	.18	2	My	2	.71	4	Je	1	.24	5	Je	30	.78	7	Jl	30	.31
3310	266	131	16M	.0632	7.4878	5.509	209	1	5	Mr	23	.55	7	Ap	22	.08	1	My	21	.61	3	Je	20	.14	6	Au	18	.20
3311	267	132	16M	.8220	26.1267	3.543	210	2	4	Ap	11	.45	5	My	10	.98	7	Je	9	.51	2	Jl	9	.04	3	Au	7	.57
3312	268	133	16M	.5807	15.2350	27.355	211	3	1	Mr	31	.82	3	Ap	30	.35	4	My	29	.88	6	Je	28	.41	7	Jl	27	.94
3313	269	134	15M	.8395	4.3433	23.512	212	4	6	Mr	20	.18	7	Ap	18	.71	2	My	18	.24	5	Jl	16	.30	6	Au	14	.84
3314	270	135	16M	.0982	22.9822	21.645	213	6	5	Ap	8	.08	6	My	7	.61	1	Je	6	.14	2	Jl	5	.67	4	Au	4	.20
3315	271	136	16M	.3570	12.0905	17.802	214	7	2	Mr	28	.45	3	Ap	26	.98	5	My	26	.51	7	Je	25	.04	1	Jl	24	.57
3316	272	137	16M	.6157	1.1988	13.960	215	1	6	Mr	17	.81	1	Ap	16	.34	4	Je	14	.41	5	Jl	13	.94	7	Au	12	.47
3317	273	138	15M	.8745	19.8377	12.093	216	2	5	Ap	4	.71	7	My	4	.24	1	Je	2	.77	3	Jl	2	.30	4	Jl	31	.83
3318	274	139	16M	.1333	8.9460	8.250	217	4	3	Mr	25	.08	4	Ap	23	.61	6	My	23	.14	7	Je	21	.67	2	Jl	21	.20
3319	275	140	16M	.3920	27.5849	6.383	218	5	1	Ap	12	.98	3	My	12	.51	5	Je	11	.04	6	Jl	10	.57	1	Au	9	.10
3320	276	141	16M	.6508	16.6932	2.541	219	6	6	Ap	2	.34	7	My	1	.87	2	My	31	.40	3	Je	29	.94	5	Jl	29	.47
3321	277	142	15M	.9095	5.8015	26.252	220	7	3	Mr	21	.71	5	Ap	20	.24	6	My	19	.77	1	Je	18	.30	4	Au	16	.33
3322	278	143	16M	.1683	24.4404	24.386	221	2	2	Ap	9	.61	4	My	9	.14	5	Je	7	.67	7	Jl	7	.20	1	Au	5	.77
3323	279	144	16M	.4270	13.5486	20.543	222	3	6	Mr	29	.98	1	Ap	28	.51	3	My	28	.04	4	Je	26	.57	6	Jl	26	.10
3324	280	145	16M	.6858	2.6569	16.700	223	4	4	Mr	19	.34	5	Ap	17	.87	1	Je	15	.93	3	Jl	15	.46	5	Au	14	.00
3325	281	146	15M	.9445	21.2958	14.833	224	5	3	Ap	6	.24	4	My	5	.77	6	Je	4	.30	7	Jl	3	.83	2	Au	2	.36
3326	282	147	16M	.2033	10.4041	10.991	225	6	7	Mr	26	.61	2	Ap	25	.14	3	My	24	.67	5	Je	23	.20	6	Jl	22	.73
3327	283	148	16M	.4621	29.0430	9.124	226	1	6	Ap	14	.50	1	My	14	.04	2	Je	12	.57	4	Jl	12	.10	5	Au	10	.63
3328	284	149	16M	.7208	18.1513	5.281	227	2	3	Ap	3	.87	5	My	3	.40	6	Je	1	.93	1	Jl	1	.46	2	Jl	30	.96
3329	285	150	15M	.9796	7.2596	1.438	228	3	1	Mr	23	.02	2	Ap	21	.77	4	My	21	.30	5	Je	19	.83	1	Au	17	.88
3330	286	151	16M	.2383	25.8985	27.126	229	5	7	Ap	11	.14	1	My	10	.67	3	Je	9	.20	4	Jl	8	.73	6	Au	7	.26
3331	287	152	16M	.4971	15.0068	23.284	230	6	4	Mr	31	.50	6	Ap	30	.03	7	My	29	.56	2	Je	28	.10	3	Jl	27	.60
3332	288	153	16M	.7558	4.1151	19.441	231	7	1	Mr	20	.87	3	Ap	19	.40	4	My	18	.93	7	Jl	16	.99	2	Au	15	.53
3333	289	154	16M	.0146	22.7540	17.574	232	1	7	Ap	7	.77	2	My	7	.30	3	Je	5	.83	5	Jl	5	.36	6	Au	3	.89
3334	290	155	16M	.2734	11.8623	13.731	233	3	5	Mr	28	.14	6	Ap	26	.67	1	My	26	.20	2	Je	24	.73	4	Jl	24	.27
3335	291	156	16M	.5321	0.9706	9.889	234	4	2	Mr	17	.50	5	My	15	.56	7	Je	14	.09	1	Jl	13	.62	3	Au	12	.14
3336	292	157	16M	.7909	19.6095	8.022	235	5	1	Ap	5	.40	2	My	4	.93	4	Je	3	.46	5	Jl	2	.99	7	Au	1	.52
3337	293	158	16M	.0496	8.7178	4.179	236	6	5	Mr	24	.77	7	Ap	23	.30	1	My	22	.83	3	Je	21	.36	4	Jl	20	.86

Surya Siddhanta.

+ 147.65293	+ 177.18353	+ 206.71411	+ 236.24470	+ 266.77528	+ 295.30588	+ 324.83647
+ 9.880	+ 11.856	+ 13.832	+ 15.808	+ 17.784	+ 19.760	+ 21.736
						+ 23.712
Asvina	Kartika	Margasira	Pausha	A.D. Magha	A.D. Phalguna	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction
3 Au 30 .68	5 S 29 .21	6 O 28○ .74	1 N 27○ .27	2 D 26 .80	98 4 Jr 25 .33	5 F 23 .83
1 Au 20 .04	5 O 18○ .10	5 N 16 .64	7 D 16 .17	99 1 Jr 84 .70	3 F 13 .23	4 Mr 14 .76
2 S 18 .57						
6 S 7 .94	1 O 7● .47	3 N 6 .00	4 D 5 .53	200 6 Jr 4 .06	7 F 2 .59	2 Mr 3 .12
4 Au 27 .31	5 S 25 .84	7 O 25 .37	1 N 23 .90	3 D 23 .43	01 4 Jr 21 .96	6 F 20○ .49
3 S 15 .21	4 O 14 .74	6 N 13 .27	7 D 12 .80	02 2 Jr 11 .33	3 F 9○ .86	5 Mr 11● .39
7 S 4 .57	2 O 4 .10	3 N 2 .63	5 D 2 .16	6 D 31 .70	03 1 Jr 30○ .23	2 F 28 .76
4 Au 24 .94	6 S 23 .47	1 O 23 .00	2 N 21 .53	4 D 21 .06	04 5 Jr 19 .59	7 F 18 .12
3 S 11 .84	5 O 11 .37	6 N 9 .90	1 D 9○ .43	05 2 Jr 7 .96	4 F 6 .49	6 Mr 8 .02
1 S 1 .20	2 S 30 .74	4 O 30 .27	5 N 28○ .80	7 D 28● .33	06 1 Jr 26 .86	3 F 25 .39
5 Au 21 .57	7 S 20 .10	1 O 19 .63	3 N 18○ .16	4 D 17 .69	07 6 Jr 16 .22	7 F 14 .76
4 S 9 .47	6 O 9 .00	7 N 7 .53	2 D 7 .06	08 3 Jr 5 .59	5 F 4 .12	2 Mr 16 .29
1 Au 28 .84	3 S 27 .37	4 O 26● .90	6 N 25 .43	7 D 24 .96	09 2 Jr 23 .49	6 Mr 4 .65
7 S 16○ .73	2 O 16● .26	3 N 14 .80	5 D 14 .33	10 6 Jr 12 .86	1 F 11 .39	4 F 22 .02
5 S 6○ .10	6 O 5 .63	1 N 4 .16	2 D 3 .69	11 4 Jr 2 .22	5 Jr 31 .75	7 Mr 2● .28
2 Au 26● .47	4 S 25 .00	5 O 24 .53	7 N 23 .06	1 D 22 .59	12 3 Jr 21○ .12	4 F 19 .65
1 S 13 .37	2 O 12 .90	4 N 11 .43	5 D 10 .96	13 7 Jr 9○ .49	2 F 8 .02	3 Mr 9 .55
5 S 2 .73	7 O 2 .26	1 O 31 .79	3 N 30 .32	4 D 29○ .86	14 6 Jr 28 .39	7 F 26 .92
3 Au 23 .10	4 S 21 .63	6 O 21 .16	7 N 19 .69	2 D 19 .22	15 3 Jr 17 .75	5 F 16 .28
2 S 11 .00	3 O 10 .53	5 N 9 .06	6 D 8 .59	16 1 Jr 7 .12	2 F 5 .65	4 Mr 6 .18
6 Au 30 .36	7 S 28 .90	2 O 28○ .43	3 N 26 .96	5 D 26 .49	17 7 Jr 25 .02	1 F 23 .55
3 Au 19 .73	6 O 17● .79	1 N 16 .32	2 D 15 .85	18 4 Jr 14 .38	5 F 12 .92	7 Mr 14 .45
5 S 18 .26						
2 S 7 .63	4 O 7● .16	5 N 5 .69	7 D 5 .22	19 1 Jr 3 .75	3 F 2 .28	4 Mr 3○ .81
7 Au 28○ .00	1 S 26 .53	3 O 26 .06	4 N 24 .59	6 D 24 .12	20 7 Jr 22 .65	2 F 21○ .18
5 S 14 .89	7 O 14 .42	1 N 12 .96	3 D 12 .49	21 5 Jr 11 .02	6 F 9○ .55	1 Mr 11 .08
3 S 4 .26	4 O 3 .79	6 N 2 .32	7 D 1 .85	2 D 31 .38	22 3 Jr 29● .91	5 F 28 .44
7 Au 24 .63	2 S 23 .16	3 O 22 .69	5 N 21 .22	6 D 20○ .75	23 1 Jr 19● .28	2 F 17 .81
6 S 12 .53	1 O 12 .06	2 N 10 .59	4 D 10○ .12	5 Jr 8● .65	7 F 7 .18	1 Mr 7 .71
3 Au 31 .89	5 S 30 .42	6 O 29 .95	1 N 28○ .48	3 D 28 .02	25 4 Jr 26 .55	6 F 25 .08
1 Au 21 .26	2 S 19 .79	4 O 19 .32	5 N 17● .85	7 D 17 .38	26 1 Jr 15 .91	3 F 14 .44
7 S 9 .16	1 O 8 .69	3 N 7● .22	4 D 6 .75	6 Jr 5 .28	7 F 3 .81	4 Mr 15 .97
4 Au 29 .52	6 S 28○ .06	7 O 27 .59	2 N 26 .12	3 D 25 .65	28 5 Jr 24 .18	2 Mr 5 .34
3 S 16○ .42	4 O 15 .95	6 N 14 .48	1 D 14 .01	2 Jr 12 .54	4 F 11 .08	6 F 22 .71
7 S 5 .79	2 O 5 .32	3 N 3 .85	5 D 3 .38	30 6 Jr 1 .91	1 Jr 31○ .44	5 Mr 12● .61
5 Au 26● .16	6 S 24 .69	1 O 24 .22	2 N 22 .75	4 D 22 .28	31 5 Jr 20○ .81	2 Mr 1 .97
4 S 14 .05	5 O 13 .58	7 N 12 .12	1 D 11 .65	32 3 Jr 10● .18	4 F 8 .71	7 F 19 .34
1 S 2 .42	2 O 1 .95	4 O 31 .48	6 N 30 .01	7 D 29● .54	33 2 Jr 28 .07	6 Mr 9 .24
5 Au 22 .79	7 S 21 .32	1 O 20 .85	3 N 19 .38	4 D 18 .91	34 6 Jr 17 .44	3 F 26 .60
4 S 10 .69	6 O 10 .22	7 N 8○ .75	2 D 8 .28	3 Jr 6 .81	5 F 5 .34	7 F 15 .97
2 Au 31 .05	3 S 29 .58	5 O 29● .11	6 N 27 .64	1 D 27 .18	36 2 Jr 25 .71	6 Mr 6 .87
7 S 17 .95	2 O 17● .48	4 N 16 .01	5 D 15 .54	37 7 Jr 14 .07	1 F 12 .60	4 F 24 .24
						3 Mr 14 .13

TABLE X—

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	☉'s Anom col. 6					☉'s Anom col. 7					☉'s Anom col. 6					☉'s Anom col. 7					☉'s Anom col. 6					☉'s Anom col. 7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
							+ 29°53059					+ 59°06117					+ 88°59176					+ 118°12235					+ 29°53059					+ 59°06117					+ 88°59176					+ 118°12235																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
							+ 1°976					+ 3°952					+ 5°928					+ 7°904					+ 1°976					+ 3°952					+ 5°928					+ 7°904																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

Surya Siddhanta.

+ 147.65293	+ 177.18353	+ 206.71411	+ 236.24470	+ 265.77529	+ 295.30588	{ + 324.83647 + 354.36705 + 21.736 + 23.712
+ 9.880	+ 11.856	+ 13.832	+ 15.808	+ 17.784	+ 19.760	

Asvina				Kartika				Margasira				Pausha				A.D.	Magha				A.D.	Phalguna				Chaitra			
Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
5 S	7	0	.32	6 O	6	.85	1 N	5	.38	2 D	4	.91	38	4 Jr	3	.44		5 F	1	.97		7 Mr	30	.50					
2 Au	27	0	.68	4 S	26	.22	5 O	25	.75	7 N	24	.28		1 D	23	.81	39	3 Jr	22	.34		4 F	20	.87					
1 S	15		.58	3 O	15	.11	4 N	13	.64	6 D	13	.17	40	7 Jr	11	.70		2 F	10	.24		3 Mr	10	.77					
5 S	3		.95	7 O	3	.48	2 N	2	.01	3 D	1	.54		5 D	31	.07	41	6 Jr	29	.60		1 F	28	.13					
3 Au	24		.32	4 S	22	.85	6 O	22	.38	7 N	20	.91		2 D	20	.44	42	3 Jr	18	.97		5 F	17	.50					
2 S	12		.21	3 O	11	.74	5 N	10	.28	6 D	9	.81	43	1 Jr	8	.34		2 F	6	.87		4 Mr	8	.40					
6 S	1		.58	1 O	1	.11	2 O	30	.64	4 N	29	.17		5 D	28	.70	44	7 Jr	27	.23		1 F	25	.76					
3 Au	20		.95	5 S	19	.48	7 O	19	.01	1 N	17	.54		3 D	17	.07	45	4 Jr	15	.60		6 F	14	.13					
2 S	8		.85	4 O	8	.38	5 N	6	.91	7 D	6	.44	46	1 Jr	4	.97		3 F	3	.50		7 Mr	15	.66					
7 Au	29		.21	1 S	27	.74	3 O	27	.27	4 N	25	.80		6 D	25	.34	47	7 Jr	23	.87		5 Mr	5	.03					
6 S	17		.11	7 O	16	.64	2 N	15	.17	3 D	14	.70	48	5 Jr	13	.23		6 F	11	.76		2 F	22	.40					
3 S	5		.48	5 O	5	.01	6 N	3	.54	1 D	3	.07	49	2 Jr	1	.60		4 Jr	31	.13		5 Mr	1	.66					
7 Au	25		.84	2 S	24	.38	3 O	23	.91	5 N	22	.44		6 D	21	.97	50	1 Jr	20	.50		3 F	19	.03					
6 S	13		.74	1 O	13	.27	2 N	11	.80	4 D	11	.33	51	5 Jr	9	.86		7 F	8	.40		1 Mr	9	.93					
4 S	3		.11	5 O	2	.64	7 N	1	.17	1 N	30	.70		3 D	30	.23	52	4 Jr	28	.76		6 F	27	.29					
1 Au	22		.48	3 S	21	.01	4 O	20	.54	6 N	19	.07		7 D	18	.60	53	2 Jr	17	.13		3 F	15	.66					
7 S	10		.37	1 O	9	.90	3 N	8	.43	4 D	7	.97	54	6 Jr	6	.50		1 F	5	.03		2 Mr	6	.56					
4 Au	30		.74	6 S	29	.27	7 O	28	.80	2 N	27	.33		3 D	26	.86	55	5 Jr	25	.39		6 F	23	.92					
3 S	18	0	.64	5 O	18	.17	6 N	16	.70	1 D	16	.23	56	2 Jr	14	.76		4 F	13	.29		5 Mr	13	.82					
1 S	7	0	.01	2 O	6	.54	4 N	5	.07	5 D	4	.60	57	7 Jr	3	.13		1 F	1	.66		3 Mr	30	.19					
5 Au	27	0	.37	6 S	25	.90	1 O	25	.43	2 N	23	.96		4 D	23	.49	58	6 Jr	22	.03		7 F	20	.56					
4 S	15		.27	5 O	14	.80	7 N	13	.33	1 D	12	.86	59	3 Jr	11	.39		4 F	9	.92		6 Mr	11	.45					
1 S	4		.64	3 O	4	.17	4 N	2	.70	6 D	2	.23		7 D	31	.76	60	2 Jr	30	.29		3 F	28	.82					
6 Au	24		.00	7 S	22	.53	2 O	22	.07	3 N	20	.60		5 D	20	.13	61	6 Jr	18	.66		1 F	17	.19					
4 S	11		.90	6 O	11	.43	7 N	9	.96	2 D	9	.49	62	4 Jr	8	.02		5 F	6	.55		7 Mr	8	.09					
2 S	1		.27	3 S	30	.80	5 O	30	.33	6 N	28	.86		1 D	28	.39	63	2 Jr	26	.92		4 F	25	.45					
6 Au	21		.64	1 S	20	.17	Margasira Kshaya.				4 N	18	.23		5 D	17	.76	64	7 Jr	16	.29		1 F	14	.82				
5 S	8		.53	2 O	19	.70	1 N	6	.59	3 D	6	.13	65	4 Jr	4	.66		6 F	3	.19		3 Mr	15	.35					
2 Au	28		.90	4 S	27	.43	5 O	26	.96	7 N	25	.49		2 D	25	.02	66	3 Jr	23	.55		7 Mr	4	.72					
1 S	16		.80	3 O	16	.33	4 N	14	.86	6 D	14	.39	67	7 Jr	12	.92		2 F	11	.45		5 F	22	.08					
6 S	6		.17	7 O	5	.70	2 N	4	.23	3 D	3	.76	68	5 Jr	2	.29		6 Jr	31	.82		1 Mr	1	.35					
3 Au	25		.53	5 S	24	.06	6 O	23	.59	1 N	22	.12		2 D	21	.65	69	4 Jr	20	.19		5 F	18	.72					
2 S	13		.43	3 O	12	.96	5 N	11	.49	7 D	11	.02	70	7 Jr	9	.55		3 F	8	.08		4 Mr	9	.61					
6 S	2		.80	1 O	2	.33	2 O	31	.86	4 N	30	.39		5 D	29	.92	71	7 Jr	28	.45		1 F	26	.98					
4 Au	23		.16	5 S	21	.69	7 O	21	.22	1 N	19	.76		3 D	19	.29	72	4 Jr	17	.82		6 F	16	.35					
3 S	10		.06	4 O	9	.59	6 N	8	.12	7 D	7	.65	73	2 Jr	6	.18		3 F	4	.71		5 Mr	6	.25					
7 Au	30		.43	1 S	28	.96	3 O	28	.49	5 N	27	.02		6 D	26	.55	74	1 Jr	25	.08		2 F	23	.61					
6 S	18	0	.33	7 O	17	.86	2 N	16	.39	3 D	15	.92	75	5 Jr	14	.45		6 F	12	.98		1 Mr	14	.51					
3 S	7	0	.69	5 O	7	.22	6 N	5	.75	1 D	5	.29	76	2 Jr	3	.82		4 F	2	.35		5 Mr	2	.88					
1 Au	27		.06	2 S	25	.59	4 O	25	.12	5 N	23	.65		7 D	23	.18	77	1 Jr	21	.71		3 F	20	.24					

TABLE X—

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon	A.D.	Week-day of 1st January.				Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada			
								Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
3378	334	199	16M	·6586	5·1168	14·039	277	2	4	Mr	21	·77	6	Ap	20	·30	7	My	19	·84	{	2	Je	18	·33	5	Au	16	·43		
3379	335	200	16M	·9174	23·7557	12·173	278	3	3	Ap	9	·67	5	My	9	·20	6	Je	7	·73	{	3	Jl	17	·90	2	Au	5	·79		
3380	336	201	17M	·1762	12·8640	8·330	279	4	1	Mr	30	·04	2	Ap	28	·57	4	My	28	·10	5	Je	26	·63	7	Jl	26	·16			
3381	337	202	16M	·4349	1·9723	4·487	280	5	5	Mr	18	·41	{	6	Ap	16	·94	3	Je	15	·00	4	Jl	14	·53	6	Au	13	·06		
3382	338	203	16M	·6937	20·6112	3·623	281	7	4	Ap	6	·30	5	My	5	·83	7	Je	4	·37	1	Jl	3	·90	3	Au	2	·43			
3383	339	204	16M	·9524	9·7195	26·332	282	1	1	Mr	26	·67	3	Ap	25	·20	4	My	24	·73	6	Je	23	·26	7	Jl	22	·79			
3384	340	205	17M	·2112	28·3584	24·465	283	2	7	Ap	14	·57	2	My	14	·10	3	Je	12	·63	5	Jl	12	·16	6	Au	10	·69			
3385	341	206	16M	·4699	17·4667	20·623	284	3	4	Ap	2	·94	6	My	2	·47	1	Je	1	·00	2	Je	30	·53	4	Jl	30	·06			
3386	342	207	16M	·7287	6·5750	16·780	285	5	2	Mr	23	·30	3	Ap	21	·83	5	My	21	·36	{	6	Je	19	·89	2	Au	17	·96		
3387	343	208	16M	·9875	25·2139	14·913	286	6	1	Ap	11	·20	2	My	10	·73	4	Je	9	·26	5	Jl	8	·79	7	Au	7	·32			
3388	344	209	17M	·2462	14·3222	11·070	287	7	5	Mr	31	·57	7	Ap	30	·10	1	My	29	·63	3	Je	28	·16	4	Jl	27	·69			
3389	345	210	16M	·5050	3·4305	7·228	288	1	2	Mr	19	·93	{	4	Ap	18	·47	7	Je	16	·53	2	Jl	16	·06	3	Au	14	·59		
3390	346	211	16M	·7637	22·0694	5·361	289	3	1	Ap	7	·83	3	My	7	·36	4	Je	5	·89	6	Jl	5	·42	7	Au	3	·95			
3391	347	212	17M	·0225	11·1777	1·514	290	4	6	Mr	28	·20	7	Ap	26	·73	2	My	26	·26	3	Je	24	·79	5	Jl	24	·32			
3392	348	213	17M	·2812	0·2860	25·230	291	5	{	3	Mr	17	·57	6	My	15	·63	1	Je	14	·16	2	Jl	13	·69	4	Au	12	·22		
3393	349	214	16M	·5400	18·9249	23·363	292	6	2	Ap	4	·46	3	My	3	·99	5	Je	2	·53	7	Jl	2	·06	1	Jl	31	·59			
3394	350	215	16M	·7987	8·0332	19·521	293	1	6	Mr	24	·83	1	Ap	23	·36	2	My	22	·89	4	Je	21	·42	{	5	Jl	20	·95		
3395	351	216	17M	·0575	26·6720	17·654	294	2	5	Ap	12	·73	7	My	12	·26	1	Je	10	·79	3	Jl	10	·32	4	Au	8	·85			
3396	352	217	17M	·3163	15·7803	13·811	295	3	3	Ap	2	·10	4	My	1	·63	6	My	31	·16	7	Je	29	·69	2	Jl	29	·22			
3397	353	218	16M	·5750	4·8886	9·968	296	4	7	Mr	21	·46	1	Ap	19	·99	{	3	My	19	·52	6	Jl	17	·59	1	Au	16	·12		
3398	354	219	16M	·8338	23·5275	8·102	297	6	6	Ap	9	·36	7	My	8	·89	2	Je	7	·42	3	Jl	6	·95	5	Au	5	·48			
3399	355	220	17M	·0925	12·6358	4·259	298	7	3	Mr	29	·73	5	Ap	28	·26	6	My	27	·79	1	Je	26	·32	2	Jl	25	·85			
3400	356	221	17M	·3513	1·7441	0·416	299	1	1	Mr	19	·09	{	2	Ap	17	·63	5	Je	15	·69	7	Jl	15	·22	1	Au	13	·75		
3401	357	222	16M	·6100	20·3830	26·104	300	2	6	Ap	5	·99	1	My	5	·52	3	Je	4	·05	4	Jl	3	·58	6	Au	2	·11			
3402	358	223	16M	·8688	9·4913	22·261	301	4	4	Mr	26	·36	5	Ap	24	·89	7	My	24	·42	1	Je	22	·95	3	Jl	22	·48			
3403	359	224	17M	·1276	28·1302	20·394	302	5	3	Ap	14	·26	4	My	13	·79	6	Je	12	·32	7	Jl	11	·85	2	Au	10	·38			
3404	360	225	17M	·3863	17·2385	16·552	303	6	7	Ap	3	·62	2	My	3	·15	3	Je	1	·69	5	Jl	1	·22	6	Jl	30	·75			
3405	361	226	16M	·6451	6·3468	12·709	304	7	4	Mr	22	·99	6	Ap	21	·52	1	My	21	·05	{	2	Je	19	·58	5	Au	17	·64		
3406	362	227	16M	·9038	24·9860	10·842	305	2	3	Ap	10	·89	5	My	10	·42	6	Je	8	·95	1	Jl	8	·48	3	Au	7	·01			
3407	363	228	17M	·1626	14·0940	6·999	306	3	1	Mr	31	·26	2	Ap	29	·79	4	My	29	·32	5	Je	27	·85	7	Jl	27	·38			
3408	364	229	17M	·4213	3·2023	3·157	307	4	5	Mr	20	·64	{	7	Ap	19	·15	3	Je	17	·21	4	Jl	16	·75	6	Au	15	·28		
3409	365	230	16M	·6801	21·8412	1·290	308	5	4	Ap	7	·52	6	My	7	·05	7	Je	5	·58	2	Jl	5	·11	3	Au	3	·64			
3410	366	231	16M	·9389	10·9495	25·002	309	7	1	Mr	27	·89	3	Ap	26	·42	4	My	25	·95	6	Je	24	·48	1	Jl	24	·01			
3411	367	232	17M	·1976	0·0578	1·159	310	1	{	6	Mr	17	·25	2	My	15	·32	3	Je	13	·85	5	Jl	13	·38	6	Au	11	·91		
3412	368	233	17M	·4564	18·6966	19·292	311	2	5	Ap	5	·15	6	My	4	·68	1	Je	3	·21	2	Jl	2	·74	4	Au	1	·27			
3413	369	234	16M	·7151	7·8049	15·450	312	3	2	Mr	24	·52	4	Ap	23	·05	5	My	22	·58	7	Je	21	·11	{	1	Jl	20	·64		
3414	370	235	16M	·9739	26·4438	13·583	313	5	1	Ap	12	·42	2	My	11	·95	4	Je	10	·48	6	Jl	10	·01	7	Au	8	·54			
3415	371	236	17M	·2326	15·5521	9·740	314	6	5	Ap	1	·78	7	My	1	·31	1	My	30	·85	3	Je	29	·38	4	Jl	28	·91			
3416	372	237	17M	·4914	4·6604	5·897	315	7	3	Mr	22	·15	4	Ap	20	·68	{	6	My	20	·21	2	Jl	18	·27	3	Au	16	·80		

Surya Siddhanta.

+ 147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·20588	{ +324·83647 +354·36705 + 21·736 + 23·712		
+ 9·880	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760			
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction
6 S 14 ·96	1 O 14 ·49	3 N 13 ·02	4 D 12 ·55	78	6 Jr 11○ ·08		7 F 9● ·61	2 Mr 11 ·14
4 S 4 ·33	5 O 3 ·86	7 N 2 ·39	1 D 1 ·92		3 D 31○ ·45	79	4 Jr 29 ·98	6 F 28 ·51
1 Au 24 ·69	3 S 23 ·22	4 O 22 ·75	6 N 21 ·28		7 D 20● ·81	80	2 Jr 19 ·35	3 F 17 ·88
7 S 11 ·59	2 O 11 ·12	3 N 9 ·65	5 D 9● ·18	81	6 Jr 7 ·71		1 F 6 ·24	2 Mr 7 ·77
4 Au 31 ·96	6 S 30 ·46	1 O 30○ ·02	2 N 28 ·55		4 D 28 ·08	82	5 Jr 26 ·61	7 F 25 ·14
2 Au 21 ·32	5 O 19○ ·36	Margasira Kshaya.		6 N 17 ·92	1 D 17 ·45	83	2 Jr 15 ·98	4 F 14 ·51
3 S 19 ·85				5 D 6 ·81	7 Jr 5 ·34		1 F 3 ·87	6 Mr 16 ·04
1 S 9 ·22	2 O 8● ·75	4 N 7 ·28	3 N 25 ·18	84	4 D 24 ·71	85	6 Jr 23 ·24	3 Mr 4 ·41
5 Au 28 ·59	7 S 27● ·12	1 O 26 ·65	2 D 14 ·08	86	3 Jr 12 ·61		5 F 11○ ·14	7 F 21○ ·77
4 S 16● ·49	6 O 16 ·02	7 N 14 ·55						6 Mr 12 ·67
1 S 5 ·85	3 O 5 ·38	4 N 3 ·91	6 D 3 ·45	87	7 Jr 1 ·98		2 Jr 31● ·51	4 Mr 2 ·04
6 Au 26 ·22	7 S 24 ·75	2 O 24 ·28	3 N 22 ·81		5 D 22 ·34	88	6 Jr 20 ·87	1 F 19 ·40
5 S 13 ·12	6 O 12 ·65	1 N 11 ·18	2 D 10○ ·71	89	4 Jr 9 ·24		5 F 7 ·77	7 Mr 9 ·30
2 S 2 ·49	4 O 2 ·02	5 O 31 ·55	7 N 30● ·08		1 D 29 ·61	90	3 Jr 28 ·14	4 F 26 ·67
6 Au 22 ·85	1 S 21 ·38	2 O 20 ·91	4 N 19● ·44		5 D 18 ·97	91	7 Jr 17 ·51	2 F 16 ·04
5 S 10 ·75	7 O 10○ ·28	1 N 8 ·81	3 D 8 ·34	92	4 Jr 6 ·87		6 F 5 ·40	7 Mr 5 ·93
3 Au 30 ·12	4 S 28○ ·65	6 O 28 ·18	7 N 26 ·71		2 D 26 ·24	93	3 Jr 24 ·77	5 F 23 ·30
2 S 18● ·01	3 O 17 ·55	5 N 16 ·08	6 D 15 ·61	94	1 Jr 14 ·14		2 F 12 ·67	4 Mr 14● ·20
6 S 7● ·38	7 O 6 ·91	2 N 5 ·44	3 D 4 ·97	95	5 Jr 3 ·50		7 F 2○ ·03	1 Mr 3● ·57
3 Au 27 ·75	5 S 26 ·28	6 O 25 ·81	1 N 24 ·34		2 D 23 ·87	96	4 Jr 22○ ·40	5 F 20 ·93
2 S 14 ·65	4 O 14 ·18	5 N 12 ·71	7 D 12 ·24	97	1 Jr 10○ ·77		3 F 9 ·30	4 Mr 10 ·83
7 S 4 ·01	1 O 3 ·54	3 N 2 ·07	4 D 1 ·61		6 D 31● ·14	98	7 Jr 29 ·67	2 F 28 ·20
4 Au 24 ·38	5 S 22 ·91	7 O 22 ·44	1 N 20 ·97		3 D 20● ·50	99	5 Jr 19 ·03	6 F 17 ·56
3 S 12 ·28	4 O 11 ·81	6 N 10○ ·34	7 D 9● ·87	300	3 Jr 8 ·40		4 F 6 ·93	6 Mr 7 ·46
7 Au 31 ·65	2 S 30 ·18	3 O 29○ ·71	5 N 28 ·24		6 D 27 ·77	01	1 Jr 26 ·30	2 F 24 ·83
5 Au 21 ·01	1 O 19○ ·07	2 N 17 ·60	4 D 17 ·13	02	5 Jr 15 ·67		7 F 14 ·20	1 Mr 15 ·73
6 S 19 ·54								
3 S 8 ·91	5 O 8● ·44	6 N 6 ·97	1 D 6 ·50	03	3 Jr 5 ·03		4 F 3 ·56	6 Mr 5○ ·09
1 Au 29○ ·28	2 S 27 ·81	4 O 27 ·34	5 N 25 ·87		7 D 25 ·14	04	1 Jr 23 ·93	3 F 22● ·46
7 S 16 ·17	1 O 15 ·71	3 N 14 ·24	4 D 13 ·77	05	6 Jr 12 ·30		7 F 10 ·83	2 Mr 12 ·36
4 S 5 ·54	6 O 5 ·07	7 N 3 ·60	2 D 3 ·13	06	3 Jr 1 ·66		5 Jr 31 ·19	6 Mr 1 ·73
1 Au 25 ·91	3 S 24 ·44	4 O 23 ·97	6 N 22 ·50		1 D 22○ ·03	07	2 Jr 20 ·56	4 F 19 ·09
7 S 13 ·81	2 O 13 ·34	3 N 11 ·87	5 D 11○ ·40	08	6 Jr 9 ·93		1 F 8 ·46	2 Mr 8 ·99
5 S 2 ·17	6 O 1 ·70	1 O 31 ·23	2 N 29● ·77		4 D 29 ·30	09	5 Jr 27 ·83	7 F 26 ·36
2 Au 22 ·54	4 S 21 ·07	5 O 20 ·60	7 N 19 ·13		1 D 18 ·66	10	3 Jr 17 ·19	4 F 15 ·72
1 S 10 ·44	2 O 9○ ·97	4 N 8 ·50	6 D 8 ·03	11	7 Jr 6 ·56		2 F 5 ·09	3 Mr 6 ·62
5 Au 30 ·81	7 S 29○ ·34	1 O 28 ·87	3 N 27 ·40		4 D 26 ·93	12	6 Jr 25 ·46	7 F 23 ·99
4 S 17 ·70	6 O 17 ·23	7 N 15 ·76	2 D 15 ·29	13	3 Jr 13 ·83		5 F 12○ ·36	6 Mr 13 ·89
2 S 7● ·07	3 O 6 ·60	5 N 5 ·13	6 D 4 ·66	14	1 Jr 3 ·19		2 F 1○ ·72	4 Mr 3● ·25
6 Au 27 ·44	7 S 25 ·97	2 O 25 ·50	4 N 24 ·03		5 D 23 ·56	15	7 Jr 22○ ·09	1 F 20 ·62
5 S 15 ·33	6 O 14 ·87	1 N 13 ·40	2 D 12 ·93	16	4 Jr 11 ·46		5 F 9 ·99	7 Mr 10 ·52

TABLE X—

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon	A.D.	☉'s Anom col. 6					☾'s Anom col. 7					☉'s Anom col. 6					☾'s Anom col. 7					☉'s Anom col. 6					☾'s Anom col. 7																									
							+ 29·53059					+ 1·976					+ 59·06117					+ 88·59176					+ 118·12235					+ 3·952					+ 5·928					+ 7·904															
							Vaisakha					Jyeshtha					Ashada					Sravana					Bhadrapada																														
Month and day A.D.	Fraction of day.	Week-day of 1st January.	Month	Day	Fraction	Week-day Month	Day	Fraction	Week-day Month	Day	Fraction	Week-day Month	Day	Fraction	Week-day Month	Day	Fraction	Week-day Month	Day	Fraction	Week-day Month	Day	Fraction	Week-day Month	Day	Fraction	Week-day Month	Day	Fraction	Week-day Month	Day	Fraction	Week-day Month	Day	Fraction	Week-day Month	Day	Fraction																			
3417	373	238	16M	·7501	23·2993	4·031	316	1	2	Ap	9	·05	3	My	8	·58	5	Je	7	·11	6	Jl	6●	·64	1	Au	5	·17	3418	374	239	17M	·0089	12·4076	0·187	317	3	6	Mr	29	·42	7	Ap	27	·95	2	My	27○	·48	4	Je	26	·01	5	Jl	25	·54
3419	375	240	17M	·2677	1·5159	23·906	318	4	3	Mr	18	·78	{	5	Ap	17	·31	1	Je	15	·37	2	Jl	14	·91	4	Au	13	·44	{	6	My	16○	·84	4	My	6○	·21	5	Je	4	·74	7	Jl	4	·27	1	Au	2	·80							
3420	376	241	17M	·5264	20·1548	22·033	319	5	2	Ap	6	·68		1	Ap	24●	·58	3	My	24	·11	4	Je	22	·64	6	Jl	22	·17		{	7	My	13	·48	2	Je	12	·01	3	Jl	11	·54	5	Au	10	·07										
3421	377	242	16M	·7852	9·2631	18·190	320	6	7	Mr	26	·05	{	4	My	6○	·21	5	Je	4	·74	7	Jl	4	·27	1	Au	2	·80	{		5	Ap	29	·47	7	My	29	·01	1	Je	27○	·54	3	Jl	27	·07										
3422	378	243	17M	·0439	27·9020	16·323	321	1	5	Ap	13	·95		2	Ap	18	·84	5	Je	16○	·90	7	Jl	16	·43	1	Au	14	·96		{	6	My	18	·37	1	My	7	·74	3	Je	6●	·27	4	Jl	5	·80										
3423	379	244	17M	·3027	17·0103	12·481	322	2	3	Ap	3	·31	{	5	Ap	29	·47	7	My	29	·01	1	Je	27○	·54	3	Jl	27	·07	{		6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70										
3424	380	245	17M	·5614	6·1186	8·638	323	3	7	Mr	23	·68		2	Ap	22	·21	3	My	21	·74	5	Je	20	·27	1	Au	18○	·33		{	5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11	·60										
3425	381	246	16M	·8202	24·7575	6·771	324	4	6	Ap	10	·58	{	1	My	10	·11	2	Je	8	·64	4	Jl	8○	·17	5	Au	6	·70	{		6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70										
3426	382	247	17M	·0790	13·8658	2·928	325	6	3	Mr	31	·94		2	Ap	18	·84	5	Je	16○	·90	7	Jl	16	·43	1	Au	14	·96		{	5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11	·60										
3427	383	248	17M	·3377	2·9741	26·640	326	7	1	Mr	20	·34	{	4	My	18	·37	3	Je	6●	·27	4	Jl	5	·80	6	Au	4	·33	{		6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70										
3428	384	249	17M	·5965	21·6130	24·773	327	1	7	Ap	8	·21		1	My	7	·74	3	Je	6●	·27	4	Jl	5	·80	6	Au	4	·33		{	5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11	·60										
3429	385	250	16M	·8552	10·7213	20·931	328	2	4	Mr	27	·58	{	6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70	{		6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70										
3430	386	251	17M	·1140	29·3601	19·064	329	4	{	1	Mr	16		·94	5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11		·60	{	5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11	·60									
3431	387	252	17M	·3727	18·4684	15·221	330	5		7	Ap	4○	·84	2	My	4	·37	3	Je	2	·90	5	Jl	2	·43	6	Jl	31	·96	{	6		Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70										
3432	388	253	17M	·6315	7·5767	11·379	331	6	5	Mr	25●	·21	6	Ap	23	·74	1	My	23	·27	2	Je	21	·80	{	5	Au	19	·86		{	5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11	·60										
3433	389	254	16M	·8902	26·2156	9·512	332	7	4	Ap	12	·11	5	My	11	·64	7	Je	10	·17	1	Jl	9	·70		3	Au	8○	·23	{		6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70										
3434	390	255	17M	·1490	15·3239	5·669	333	2	1	Ap	1	·47	3	My	1	·00	4	My	30	·53	6	Je	29	·06	7	Jl	28○	·59	{		5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11	·60											
3435	391	256	17M	·4078	4·4322	1·826	334	3	5	Mr	21	·84	7	Ap	20	·37	{	1	My	19	·90	4	Jl	17●	·96	6	Au	16		·49	{	6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70										
3436	392	257	17M	·6665	23·0711	27·514	335	4	4	Ap	9	·74	6	My	9	·27		7	Je	7○	·80	2	Jl	7	·33	3	Au	5	·86	{		5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11	·60										
3437	393	258	16M	·9253	12·1794	23·671	336	5	2	Mr	29	·10	3	Ap	27	·63	5	My	27○	·17	6	Je	25	·70	1	Jl	25	·23	{		6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70											
3438	394	259	17M	·1840	1·2877	19·829	337	7	6	Mr	18	·47	{	1	Ap	17	·00	4	Je	15	·06	5	Jl	14	·59	7	Au	13		·12	{	5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11	·60										
3439	395	260	17M	·4428	19·9266	17·962	338	1	5	Ap	6	·37		6	My	5●	·90	1	Je	4	·43	2	Jl	3	·96	4	Au	2	·49	{		6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70										
3440	396	261	17M	·7015	9·0349	14·119	339	2	2	Mr	26○	·74	4	Ap	25	·27	5	My	24	·80	7	Je	23	·33	1	Jl	22	·86	{		5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11	·60											
3441	397	262	16M	·9603	27·6738	12·252	340	3	1	Ap	13	·63	3	My	13	·16	4	Je	11	·69	6	Jl	11	·23	7	Au	9	·76		{	6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70											
3442	398	263	17M	·2191	16·7821	8·410	341	5	6	Ap	3	·00	7	My	2	·53	2	Je	1	·06	3	Je	30	·59	5	Jl	30	·12	{		5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11	·60											
3443	399	264	17M	·4778	5·8904	4·567	342	6	3	Mr	23	·37	4	Ap	21	·90	6	My	21	·43	7	Je	19	·95	4	Au	18	·02		{	6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70											
3444	400	265	17M	·7366	24·5293	2·700	343	7	2	Ap	11	·27	3	My	10	·80	5	Je	9	·33	6	Jl	8○	·86	1	Au	7	·39	{		5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11	·60											
3445	401	266	16M	·9953	13·6376	26·412	344	1	6	Mr	30	·63	1	Ap	29	·16	2	My	28	·69	4	Je	27○	·22	5	Jl	26	·75		{	6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70											
3446	402	267	17M	·2541	2·7459	22·569	345	3	4	Mr	20	·00	{	5	Ap	18	·53	1	Je	16	·59	3	Jl	16	·12	4	Au	14	·65		{	6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70										
3447	403	268	17M	·5128	21·3848	20·702	346	4	2	Ap	7	·90		4	My	7○	·43	5	Je	5●	·96	7	Jl	5	·49	2	Au	4	·02	{		5	My	15	·00	6	Je	13	·53	1	Jl	13	·07	2	Au	11	·60										
3448	404	269	17M	·7716	10·4931	16·860	347	5	7	Mr	28	·26	1	Ap	26○	·65	3	My	26	·33	4	Je	24	·86	6	Jl	24	·39	{		6	Ap	26○	·11	7	My	25	·64	2	Je	24	·17	3	Jl	23	·70											
3449	405																																																								

rya Siddhanta.

147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·30588	{ + 324·83647 + 354·36705 + 21·736 + 23·712																				
9·880	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760																					
Asvina	Kartika				Margasira				Pausha				A.D.	Magha				A.D.	Phalguna				Chaitra			
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
S	3	·70	4 O	3	·23	5 N	1	·76	7 D	1	·29		1 D	30●	·82	17	3 Jr	29	·35	4 F	27	·89				
Au	24	·07	1 S	22	·60	3 O	22	·13	4 N	20○	·66		6 D	20	·19	18	7 Jr	18	·72	2 F	17	·25				
S	11	·97	7 O	11	·50	2 N	10○	·03	3 D	9	·56	19	5 Jr	8	·09		6 F	6	·62	1 Mr	8	·15				
S	1	·33	4 S	30	·86	6 O	30○	·39	7 N	28	·93		2 D	28	·46	20	3 Jr	26	·99	5 F	25	·52				
Au	20	·70	3 O	18●	·76	5 N	17	·29	6 D	16	·82	21	1 Jr	15	·35		2 F	13	·88	4 Mr	15○	·41				
S	19	·23																								
S	8○	·60	1 O	8	·13	2 N	6	·66	4 D	6	·19	22	5 Jr	4	·72		7 F	3	·25	1 Mr	4○	·78				
Au	28○	·97	5 S	27	·50	7 O	27	·03	1 N	25	·56		3 D	25	·09	23	4 Jr	23	·62	6 F	22	·15				
S	16	·86	4 O	16	·39	5 N	14	·92	7 D	14	·45	24	1 Jr	12	·99		3 F	11●	·52	5 Mr	12	·05				
S	5	·23	1 O	4	·76	3 N	3	·29	4 D	2	·82	25	6 Jr	1○	·35		7 Jr	30	·88	2 Mr	1	·41				
Au	25	·60	6 S	24	·13	7 O	23	·66	2 N	22	·19		3 D	21●○	·72	26	5 Jr	20	·25	6 F	18	·78				
S	13	·49	5 O	13	·03	6 N	11	·56	1 D	11●○	·09	27	2 Jr	9	·62		4 F	8	15	5 Mr	9	·68				
S	2	·80	2 O	2	·39	3 O	31	·92	5 N	30	·45		6 D	29	·98	28	1 Jr	28	·51	3 F	27	·05				
Au	22	·23	6 S	20	·76	1 O	20○	·29	2 N	18	·82		4 D	18	·35	29	5 Jr	16	·88	7 F	15	·41				
S	10	·13	5 O	9●○	·66	7 N	8	·19	1 D	7	·72	30	3 Jr	6	·25		4 F	4	·78	6 Mr	6	·31				
Au	30	·49	3 S	29	·02	4 O	28	·55	6 N	27	·09		7 D	26	·62	31	2 Jr	25	·15	3 F	23○	·68				
S	18	·39	1 O	17	·92	3 N	16	·45	4 D	15	·98	32	6 Jr	14	·51		1 F	13○	·04	2 Mr	13●	·57				
S	6	·76	6 O	6	·29	7 N	4	·82	2 D	4	·35	33	3 Jr	2	·88		5 F	1●○	·41	6 Mr	2	·94				
Au	27	·13	3 S	25	·66	5 O	25	·19	6 N	23	·72		1 D	23	·25	34	2 Jr	21●	·78	4 F	20	·31				
S	15	·02	2 O	14	·55	4 N	13	·08	5 D	12	·61	35	7 Jr	11	·15		1 F	9	·68	3 Mr	11	·21				
S	4	·39	6 O	3	·92	1 N	2	·45	2 D	1○	·98		4 D	31	·51	36	6 Jr	30	·04	7 F	28	·57				
Au	23	·76	4 S	22	·29	5 O	21	·82	7 N	20○	·35		1 D	19	·88	37	3 Jr	18	·41	4 F	16	·94				
S	11	·65	3 O	11	·19	4 N	9○	·72	6 D	9	·25	38	7 Jr	7	·78		2 F	6	·31	3 Mr	7	·84				
S	1	·02	7 S	30	·55	2 O	30	·08	3 N	28	·61		5 D	28	·14	39	6 Jr	26	·67	1 F	25	·21				
Au	21	·39	6 O	19●	·45	7 N	17	·98	2 D	17	·51	40	4 Jr	16	·04		5 F	14	·57	7 Mr	15○	·10				
S	19○	·92																								
S	8○	·29	3 O	7	·82	5 N	6	·35	6 D	5	·88	41	1 Jr	4	·41		2 F	2	·94	4 Mr	4●	·47				
Au	28○	·65	1 S	27	·18	2 O	26	·71	4 N	25	·25		5 D	24	·78	42	7 Jr	23	·31	1 F	21	·84				
S	16	·55	7 O	16	·08	1 N	14	·61	3 D	14	·14	43	4 Jr	12○	·67		6 F	11	·20	7 Mr	12	·73				
S	5	·92	4 O	5	·45	5 N	3	·98	7 D	3	·51	44	2 Jr	2○	·04		3 Jr	31	·57	4 Mr	1	·10				
Au	25	·29	1 S	23	·82	3 O	23	·35	4 N	21	·88		6 D	21○	·41	45	7 Jr	19	·94	2 F	18	·47				
S	13	·18	7 O	12	·71	2 N	11	·24	3 D	10	·77	46	5 Jr	9	·31		6 F	7	·84	1 Mr	9	·37				
S	2	·55	5 O	2	·08	6 O	31○	·61	1 N	30	·14		2 D	29	·67	47	4 Jr	28	·20	5 F	26	·73				
Au	22	·92	2 S	21	·45	3 O	20○	·98	5 N	19	·51		7 D	19	·04	48	1 Jr	17	·57	3 F	16	·10				
S	9	·81	1 O	9●	·35	2 N	7	·88	4 D	7	·41	49	5 Jr	5	·94		7 F	4	·47	2 Mr	6	·00				
Au	30	·18	5 S	28	·71	7 O	28	·24	1 N	26	·77		3 D	26	·30	50	4 Jr	24	·83	6 F	23○	·37				
S	18	·08	4 O	17	·61	6 N	16	·14	7 D	15	·67	51	2 Jr	14	·20		3 F	12○	·73	5 Mr	14	·26				
S	7	·45	1 O	6	·98	3 N	5	·51	5 D	5	·04	52	6 Jr	3	·57		1 F	2●	·10	2 Mr	2	·63				
Au	26	·81	6 S	25	·34	7 O	24	·87	2 N	23	·41		3 D	22	·94	53	5 Jr	21	·47	7 F	20	·00				
S	14	·71	5 O	14	·24	6 N	12	·77	1 D	12○	·30	54	2 Jr	10●	·83		4 F	9	·36	5 Mr	10	·89				
S	4	·08	2 O	3	·61	4 N	2	·14	5 D	1○	·67		7 D	31	·20	55	1 Jr	29	·73	3 F	28	·26				

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	Vaisakha	Jyeshtha	Ashada	Shravana	Bhadrapada								
									Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction								
3456 412	277	17M	8416	11-9512	19-600	355	1	4 Mr	29	79	6 Ap	28	32	7 My	27	85	2 Je	26	38	3 Jl	25
3457 413	278	17M	1004	1-0595	15-758	356	2	2 Mr	18	16	3 Ap	16	69	6 Je	14	75	1 Jl	14	28	2 Au	12
3458 414	279	17M	3592	19-6984	13-891	357	4	1 Ap	6	06	5 My	16	22	2 My	5	59	4 Je	4	12	5 Jl	3
3459 415	280	17M	6179	8-8067	10-048	358	5	5 Mr	26	42	6 Ap	24	95	1 My	24	49	3 Je	23	02	4 Jl	22
3460 416	281	17M	8767	27-4459	8-181	359	6	4 Ap	14	32	5 My	13	85	7 Je	12	38	1 Jl	11	91	3 Au	10
3461 417	282	17M	1354	16-5539	4-339	360	7	1 Ap	2	69	3 My	2	22	4 My	31	75	6 Je	30	28	7 Jl	29
3462 418	283	17M	3942	5-6622	0-496	361	2	6 Mr	23	30	7 Ap	21	59	2 My	21	12	5 Jl	19	18	6 Au	17
3463 419	284	17M	6529	24-3011	26-184	362	3	4 Ap	10	95	6 My	10	48	1 Je	9	01	2 Jl	8	55	4 Au	7
3464 420	285	17M	9117	13-4094	22-341	363	4	2 Mr	31	32	3 Ap	29	85	5 My	29	38	6 Je	27	91	1 Jl	27
3465 421	286	17M	1705	2-5177	18-498	364	5	6 Mr	19	69	1 Ap	18	22	4 Je	16	28	5 Jl	15	81	7 Au	14
3466 422	287	17M	4292	21-1565	16-631	365	7	5 Ap	7	59	2 My	17	75	7 My	7	0	1 Je	5	65	3 Jl	5
3467 423	288	17M	6880	10-2648	12-789	366	1	2 Mr	27	95	4 Ap	26	48	6 My	26	01	7 Je	24	54	2 Jl	24
3468 424	289	17M	9467	28-9037	10-922	367	2	1 Ap	15	85	3 My	15	38	4 Je	13	91	6 Jl	13	44	7 Au	11
3469 425	290	17M	2055	18-0120	7-079	368	3	6 Ap	4	22	7 My	3	75	2 Je	2	28	3 Jl	1	81	5 Jl	31
3470 426	291	17M	4642	7-1203	3-236	369	5	3 Mr	24	58	5 Ap	23	11	6 My	22	65	1 Je	21	18	4 Au	19
3471 427	292	17M	7230	25-7592	1-370	370	6	2 Ap	12	48	4 My	12	01	5 Je	10	54	7 Jl	10	07	1 Au	8
3472 428	293	17M	9818	14-8675	25-082	371	7	6 Ap	1	85	1 My	1	38	2 My	30	91	4 Je	29	44	5 Jl	28
3473 429	294	17M	2405	3-9758	21-239	372	1	4 Mr	21	22	5 Ap	19	75	7 My	19	28	3 Jl	17	34	4 Au	15
3474 430	295	17M	4993	22-6147	19-372	373	3	3 Ap	9	11	4 My	8	64	1 Je	17	81	6 Je	7	0	7 Jl	6
3475 431	296	17M	7580	11-7230	15-529	374	4	7 Mr	29	48	2 Ap	28	01	3 My	27	54	7 Jl	6	71	2 Au	5
3476 432	297	18M	0168	0-8313	11-687	375	5	4 Mr	18	85	7 My	16	91	2 Je	15	44	3 My	27	54	5 Je	26
3477 433	298	17M	2755	19-4702	9-820	376	6	3 Ap	5	75	2 Je	15	44	6 Je	7	0	3 My	27	54	5 Je	26
3478 434	299	17M	5343	8-5785	5-977	377	1	1 Mr	26	11	5 My	5	28	4 My	24	17	1 Je	3	34	2 Au	1
3479 435	300	17M	7930	27-2174	4-110	378	2	7 Ap	14	01	4 My	8	64	6 Je	7	0	2 Ap	24	64	4 My	24
3480 436	301	18M	0518	16-3259	0-268	379	3	4 Ap	3	38	1 My	13	54	3 Je	12	07	4 My	24	17	5 Je	22
3481 437	302	17M	3106	5-4340	23-979	380	4	1 Mr	22	74	5 My	2	91	4 My	20	81	1 Je	3	34	7 Jl	10
3482 438	303	17M	5693	24-0729	22-113	381	6	7 Ap	10	64	2 My	10	17	6 Je	19	34	4 My	20	81	7 Jl	10
3483 439	304	17M	8281	13-1812	18-270	382	7	5 Mr	31	01	3 Je	8	70	1 My	29	07	6 Je	16	97	1 Je	30
3484 440	305	18M	0868	2-2895	14-427	383	1	2 Mr	20	38	6 Ap	29	54	2 My	19	34	5 My	18	0	4 My	20
3485 441	306	17M	3456	20-9283	12-560	384	2	1 Ap	7	27	3 Ap	18	91	4 Je	5	33	6 Ap	29	54	2 My	19
3486 442	307	17M	6043	10-0366	8-718	385	4	5 Mr	27	64	5 My	18	44	1 My	25	70	6 Ap	29	54	2 My	19
3487 443	308	17M	8631	28-6755	6-851	386	5	4 Ap	15	54	2 My	10	17	4 Je	5	33	5 My	18	0	4 My	20
3488 444	309	18M	1219	17-7838	3-008	387	6	1 Ap	4	91	3 My	4	44	7 Je	13	60	1 My	29	07	2 Je	27
3489 445	310	17M	3806	6-8921	26-720	388	7	6 Mr	24	27	4 Je	2	97	2 My	22	33	6 Je	16	97	1 Jl	16
3490 446	311	17M	6394	25-5310	24-853	389	2	5 Ap	12	17	6 My	11	70	3 Je	8	70	5 My	29	07	2 Je	27
3491 447	312	17M	8981	14-6393	21-011	390	3	2 Ap	1	54	1 Ap	20	43	4 My	30	60	6 My	26	01	7 My	3
3492 448	313	18M	1569	3-7476	17-168	391	4	6 Mr	21	90	2 My	6	80	4 Je	18	50	3 My	4	44	4 Je	2
3493 449	314	17M	4156	22-3865	15-301	392	5	5 Ap	8	80	7 My	8	33	1 Je	6	86	2 My	22	33	5 Jl	20
3494 450	315	17M	6744	11-4948	11-458	393	7	3 Mr	29	17	4 Ap	27	70	6 My	27	23	4 Je	18	50	3 Je	20

147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·30588	{ +324·83647 +354·36705 + 21·736 + 23·712																				
9·880	+ 11·356	+ 13·832	+ 15·808	+ 17·784	+ 19·760																					
Asvina			Kartika			Margasira			Pausha			A.D.			Magha			A.D.			Phalguna			Chaitra		
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
Au	24	·45	6 S	22	·98	1 O	22	·51	3 N	21○	·04		4 D	·0	·57	56	6 Jr	19	·10	7 F	17	·63				
S	11	·34	5 O	10	·87	7 N	9●	·40	1 D	8	·93	57	3 Jr	7	·47		5 F	6	·00	6 Mr	7	·53				
Au	31	·71	3 S	30○	·24	4 O	29	·77	6 N	28	·30		7 D	27	·83	58	2 Jr	26	·36	3 F	24	·89				
Au	21	·08	2 O	19	·14	3 N	17	·67	5 D	17	·20	59	6 Jr	15	·73		1 F	14	·26	2 Mr	15○	·79				
S	19○	·61																								
S	8○	·97	6 O	8	·51	1 N	7	·04	2 D	6	·57	60	4 Jr	5	·10		5 F	3	·63	7 Mr	4●	·16				
Au	28●	·34	3 S	26	·87	5 O	26	·40	6 N	24	·93		1 D	24	·46	61	2 Jr	22○	·99	4 F	21	·53				
S	16	·24	2 O	15	·77	4 N	14	·30	5 D	13	·83	62	7 Jr	12○	·36		1 F	10	·89	3 Mr	12	·42				
S	5	·61	7 O	5	·14	1 N	3	·67	3 D	3	·20	63	4 Jr	1●	·73		6 Jr	31	·26	7 Mr	1	·76				
Au	25	·97	4 S	24	·50	6 O	24	·03	7 N	22	·57		2 D	22	·10	64	3 Jr	20	·63	5 F	19	·19				
S	12	·87	3 O	12	·40	4 N	10○	·93	6 D	10	·46	65	7 Jr	8	·99		2 F	7	·52	4 Mr	9	·08				
S	2	·24	7 O	1	·77	2 O	31○	·30	3 N	29	·83		5 D	29	·36	66	6 Jr	27	·89	1 F	26	·42				
Au	22	·61	5 S	21	·14	6 O	20○	·67	1 N	19	·20		2 D	18	·73	67	4 Jr	17	·26	7 Mr	17	·32				
S	10	·50	4 O	10●	·03	5 N	8	·56	7 D	8	·09	68	1 Jr	6	·63		5 F	15	·79							
Au	29○	·87	1 S	28	·40	2 O	27	·93	4 N	26	·45		5 D	25	·99	69	3 F	5	·16	4 Mr	5○	·69				
S	17	·77	7 O	17	·30	1 N	15	·83	3 D	15	·36	70	4 Jr	13	·89		7 Jr	24	·52	2 F	23○	·05				
S																	6 F	12	·42	7 Mr	13	·95				
S	7	·13	4 O	6	·67	6 N	5	·20	7 D	4	·73	71	2 Jr	3	·26		3 F	1●	·79	5 Mr	3	·32				
Au	27	·50	2 S	26	·03	3 O	25	·56	5 N	24	·09		6 D	23○	·62	72	1 Jr	22	·15	2 F	20	·69				
S	14	·40	7 O	13	·93	2 N	12	·46	3 D	11○	·99	73	5 Jr	10	·52		7 F	9	·05	1 Mr	10	·58				
S	3	·77	5 O	3	·30	6 N	1	·83	1 D	1○	·36		2 D	30	·89	74	4 Jr	29	·42	5 F	27	·95				
Au	24	·13	2 S	22	·66	4 O	22	·19	5 N	20●	·73		7 D	20	·26	75	1 Jr	18	·79	3 F	17	·32				
S	12	·03	1 O	11○	·56	3 N	10●	·09	4 D	9	·62	76	6 Jr	8	·15		7 F	6	·68	2 Mr	7	·21				
Au	31	·40	5 S	29○	·93	7 O	29	·46	1 N	27	·99		3 D	27	·52	77	5 Jr	26	·05	6 F	24	·58				
S	19○	·30	4 O	18	·83	6 N	17	·36	7 D	16	·89	78	2 Jr	15	·42		3 F	13	·95	5 Mr	15	·48				
S	8●	·66	2 O	8	·19	3 N	6	·72	5 D	6	·25	79	6 Jr	4	·79		1 F	3○	·32	2 Mr	4	·85				
Au	29●	·03	6 S	27	·56	1 O	27	·09	2 N	25	·62		4 D	25	·15	80	5 Jr	23●	·68	7 F	22	·21				
S	15	·93	5 O	15	·46	6 N	13	·99	1 D	13	·52	81	3 Jr	12●	·05		4 F	10	·58	6 Mr	12	·11				
S	5	·29	2 O	4	·83	4 N	3	·36	5 D	2	·89	82	7 Jr	1●	·42		1 Jr	30	·95	3 Mr	1	·48				
Au	25	·66	7 S	24	·19	1 O	23	·72	3 N	22○	·25		4 D	21	·78	83	6 Jr	20	·31	7 F	18	·85				
S	13	·56	6 O	13	·09	7 N	11●	·62	2 D	11	·15	84	3 Jr	9	·68		5 F	8	·21	6 Mr	8	·74				
S	1	·93	3 O	1	·46	4 O	30○	·99	6 N	29	·52		1 D	29	·05	85	2 Jr	27	·58	4 F	26	·11				
Au	22	·29	7 S	20	·82	2 O	20	·35	3 N	18	·89		5 D	18	·42	86	6 Jr	16	·95	3 Mr	17○	·01				
S	10○	·19	6 O	9	·72	1 N	8	·25	2 D	7	·78	87	4 Jr	6	·31		1 F	15	·48							
Au	30○	·56	4 S	29	·09	5 O	28	·62	7 N	27	·15		1 D	26	·68	88	5 F	4	·84	7 Mr	6●	·37				
S	17	·46	2 O	16	·99	4 N	15	·52	6 D	15	·05	89	7 Jr	13	·58		3 Jr	25	·21	4 F	23	·74				
S																	2 F	12	·11	3 Mr	13	·64				
S	6	·82	7 O	6	·35	1 N	4	·88	3 D	4	·41	90	4 Jr	2○	·95		6 F	1	·48	1 Mr	3	·01				
Au	27	·19	4 S	25	·72	6 O	25	·25	7 N	23	·78		2 D	23○	·31	91	3 Jr	21	·84	5 F	29	·37				
S	15	·09	3 O	14	·62	5 N	13	·15	6 D	12○	·68	92	1 Jr	11	·21		2 F	9	·74	4 Mr	19	·27				
S	3	·45	7 O	2	·99	2 N	1	·52	4 D	1	·05		5 D	30	·58	93	7 Jr	29	·11	1 F	27	·64				
Au	23	·82	5 S	22	·35	6 O	21○	·88	1 N	20●	·41		2 D	19	·94	94	4 Jr	18	·47	6 F	17	·01				

TABLE X.

[illegible]

TABLE X

Kaliyuga.			Vikrama Era.			Saka Era.			Com- mence- ment of Solar Year.			First New-Moon in Solar Year.			Anomaly of first New-Moon.			A.D.			Week-day of 1st January.			☉'s Anom col. 6.			☾'s Anom col. 7.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
									Month and day A.D.			Fraction of day.												Vaisakha			Jyeshtha			Ashada			Sravana			Bhadrapada																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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rya Siddhanta.

147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·30588	{ + 324·83647 + 354·86705 + 21·736 + 23·712																
9·880	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760																	
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D. Phalguna	Chaitra															
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction				
Au	31○	·46	6 S	29●	·99	1 O	29	·52	3 N	28	·05		4 D	27	·58	34	6 Jr	26	·12	7 F	24●○	·65
S	19	·36	5 O	18	·89	7 N	17	·42	1 D	16	·95	35	3 Jr	15	·48		5 F	14●○	·01	6 Mr	15	·54
S	8	·73	3 O	8	·26	4 N	6	·79	6 D	6	·32	36	7 Jr	4	·85		2 F	3●	·38	3 Mr	3	·91
Au	28	·09	7 S	26	·62	2 O	26	·16	3 N	24	·69		5 D	24○	·22	37	6 Jr	22	·75	1 F	21	·28
S	15	·99	6 O	15	·52	1 N	14	·05	2 D	13○	·58	38	4 Jr	12	·11		5 F	10	·64	7 Mr	12	·18
S	5	·36	3 O	4	·89	5 N	3	·42	6 D	2●○	·95	39	1 Jr	1	·48		3 Jr	31	·01	4 Mr	1	·54
Au	25	·73	1 S	24	·26	2 O	23	·79	4 N	22	·32		5 D	21	·85	40	7 Jr	20	·38	1 F	18	·91
S	12	·62	7 O	12○	·15	1 N	10	·68	3 D	10	·22	41	4 Jr	8	·75		6 F	7	·28	7 Mr	8	·81
S	1	·99	4 O	1○	·52	6 O	31	·05	7 N	29	·58		2 D	29	·11	42	3 Jr	27	·64	5 F	26	·17
S	20●○	·89	3 O	20	·42	4 N	18	·95	6 D	18	·48	43	1 Jr	17	·01		2 F	15	·54	4 Mr	17	·07
S	10	·26	7 O	9	·79	2 N	8	·32	3 D	7	·85	44	5 Jr	6	·38		6 F	4○	·91	1 Mr	5	·44
Au	29	·62	5 S	28	·15	6 O	27	·68	1 N	26	·21		2 D	25	·74	45	4 Jr	24○	·28	5 F	22	·81
S	17	·52	4 O	17	·05	5 N	15	·58	7 D	15	·11	46	1 Jr	13●○	·64		3 F	12	·17	4 Mr	13	·70
S	6	·89	1 O	6	·42	2 N	4	·95	4 D	4	·48	47	6 Jr	3	·01		7 F	1	·54	2 Mr	3	·07
Au	27	·25	5 S	25	·78	7 O	25	·32	1 N	23○	·85		3 D	23	·38	48	4 Jr	21	·91	6 F	20	·44
S	14	·15	4 O	13	·68	6 N	12○	·21	7 D	11	·74	49	2 Jr	10	·27		3 F	8	·80	5 Mr	10	·34
S	3	·52	2 O	3	·05	3 N	1○	·58	5 D	1	·11		6 D	30	·64	50	1 Jr	29	·17	2 F	27	·70
Au	23	·89	6 S	22	·42	7 O	21	·95	2 N	20	·48		4 D	20	·01	51	5 Jr	18	·54	7 F	17	·07
S	11○	·78	5 O	11	·31	6 N	9	·84	1 D	9	·38	52	2 Jr	7	·91		4 F	6	·44	5 Mr	6○	·97
Au	31○	·15	2 S	29	·68	4 O	29	·21	5 N	27	·74		7 D	27	·27	53	1 Jr	25	·80	3 F	24○	·33
S	19	·05	1 O	18	·58	3 N	17	·11	4 D	16	·64	54	6 Jr	15	·17		7 F	13	·70	2 Mr	15	·23
S	8	·42	5 O	7	·95	7 N	6	·48	2 D	6	·01	55	3 Jr	4○	·54		5 F	3	·07	6 Mr	4	·60
Au	28	·78	3 S	27	·31	4 O	26	·84	6 N	25	·37		7 D	24○	·90	56	2 Jr	23	·44	3 F	21	·97
S	15	·68	2 O	15	·21	3 N	13	·74	5 D	13○	·27	57	6 Jr	11	·80		1 F	10	·33	2 Mr	11	·86
S	5	·05	6 O	4	·58	1 N	3	·11	2 D	2●	·64	58	4 Jr	1	·17		5 Jr	30	·70	7 Mr	1	·23
Au	25	·41	3 S	23	·94	5 O	23○	·48	7 N	22	·01		1 D	21	·54	59	3 Jr	20	·07	4 F	18	·60
S	13	·31	2 O	12●○	·84	4 N	11	·37	5 D	10	·90	60	7 Jr	9	·43		1 F	7	·96	3 Mr	8	·50
S	1	·68	7 O	1○	·21	1 O	30	·74	3 N	29	·27		4 D	28	·80	61	6 Jr	27	·33	7 F	25	·86
S	20●	·58	6 O	20	·11	7 N	18	·64	2 D	18	·17	62	3 Jr	16	·70		5 F	15○	·23	6 Mr	16●	·76
S	9	·94	3 O	9	·47	5 N	8	·00	6 D	7	·54	63	1 Jr	6	·07		2 F	4○	·60	4 Mr	6	·13
Au	30	·31	7 S	28	·84	2 O	28	·37	3 N	26	·90		5 D	26	·43	64	6 Jr	24○	·96	1 F	23	·49
S	17	·21	6 O	16	·74	1 N	15	·27	2 D	14	·80	65	4 Jr	13●	·33		5 F	11	·86	7 Mr	13	·39
S	6	·58	4 O	6	·11	5 N	4	·64	7 D	4○	·17	66	1 Jr	2	·70		3 F	1	·23	4 Mr	2	·76
Au	26	·94	1 S	25	·47	3 O	25	·00	4 N	23○	·53		6 D	23	·06	67	7 Jr	21	·60	2 F	20	·13
S	14	·84	7 O	14	·37	1 N	12●○	·90	3 D	12	·43	68	4 Jr	10	·96		6 F	9	·49	1 Mr	10	·02
S	3	·21	4 O	2	·74	6 N	1●	·27	7 N	30	·80		2 D	30	·33	69	3 Jr	28	·86	5 F	27	·31
Au	23	·57	2 S	22○	·10	3 O	21●	·64	5 N	20	·17		6 D	19	·70	70	1 Jr	18	·23	2 F	16	·76
S	11○	·47	1 O	11	·00	2 N	9	·53	4 D	9	·06	71	5 Jr	7	·59		7 F	6	·12	1 Mr	7○	·66
Au	31○	·84	5 S	30	·37	6 O	29	·90	1 N	28	·43		2 D	27	·96	72	4 Jr	26	·49	6 F	25	·02

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada						
								Week-day of 1st January.				Week-day				Week-day				Week-day				Week-day						
								Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction			
3573	529	394	18M	1162	7.4375	13.176	472	7	7	Mr	25	.55	2	Ap	24	.08	3	My	23	.61	5	Je	22	.14	{	6	Jl	21		
3574	530	395	18M	3749	26.0763	11.310	473	2	6	Ap	13	.45	7	My	12	.98	2	Je	11	.51	4	Jl	11	.04		5	Au	9		
3575	531	396	18M	6337	15.1846	7.467	474	3	3	Ap	2	.82	5	My	2	.35	6	My	31	.88	1	Je	30	.41		2	Jl	29		
3576	532	397	18M	8924	4.2929	3.624	475	4	1	Mr	23	.18	2	Ap	21	.72	{	4	My	21	.25	7	Jl	19	.31		1	Au	17	
																		5	Je	19	.78									
3577	533	398	18M	1512	22.9318	1.757	476	5	7	Ap	10	.08	1	My	9	.61	3	Je	8	.14	4	Jl	7	.67		6	Au	6		
3578	534	399	18M	4099	12.0401	25.469	477	7	4	Mr	30	.45	5	Ap	28	.98	7	My	28	.51	2	Je	27	.04		3	Jl	26		
3579	535	400	18M	6687	1.1484	21.627	478	1	1	Mr	19	.82	{	3	Ap	18	.35	6	Je	16	.41	7	Jl	15	.94		2	Au	14	
														4	My	17	.88													
3580	536	401	18M	9274	19.7873	19.760	479	2	7	Ap	7	.71	2	My	7	.24	3	Je	5	.78	5	Jl	5	.31		6	Au	3		
3581	537	402	18M	1862	8.8956	15.917	480	3	5	Mr	27	.08	6	Ap	25	.61	1	My	25	.14	2	Je	23	.67		4	Jl	23		
3582	538	403	18M	4450	27.5345	14.050	481	5	3	Ap	14	.98	5	My	14	.51	7	Je	13	.04	1	Jl	12	.57		3	Au	11	.00	
3583	539	404	18M	7037	16.6428	10.208	482	6	1	Ap	4	.35	2	My	3	.88	4	Je	2	.41	5	Jl	1	.94		7	Jl	31	.00	
3584	540	405	18M	9625	5.7511	6.365	483	7	5	Mr	24	.71	7	Ap	23	.24	1	My	22	.77	{	3	Je	21	.30		6	Au	19	.00
																						4	Jl	20	.84					
3585	541	406	18M	2212	24.3900	4.498	484	1	4	Ap	11	.61	5	My	11	.14	7	Je	9	.67	2	Jl	9	.20		3	Au	7		
3586	542	407	18M	4800	13.4983	0.655	485	3	1	Mr	31	.98	3	Ap	30	.51	5	My	30	.04	6	Je	28	.57		1	Jl	28		
3587	543	408	18M	7387	2.6061	24.367	486	4	6	Mr	21	.34	{	7	Ap	19	.88	3	Je	17	.94	5	Jl	17	.47		7	Au	16	
														2	My	19	.41													
3588	544	409	18M	9975	21.2455	22.500	487	5	5	Ap	9	.24	6	My	8	.77	1	Je	7	.30	2	Jl	6	.83		4	Au	5		
3589	545	410	18M	2563	10.3538	18.658	488	6	2	Mr	28	.61	4	Ap	27	.14	5	My	26	.67	7	Je	25	.20		1	Jl	24		
3590	546	411	18M	5150	28.9927	16.791	489	1	1	Ap	18	.51	3	My	16	.04	4	Je	14	.57	6	Jl	14	.10		7	Au	12		
3591	547	412	18M	7738	18.1010	12.948	490	2	5	Ap	5	.87	7	My	5	.40	1	Je	3	.94	3	Jl	3	.47		5	Au	2		
3592	548	413	19M	0325	7.2092	9.105	491	3	3	Mr	26	.24	4	Ap	24	.77	6	My	24	.30	7	Je	22	.83		{	2	Jl	22	.00
																										3	Au	20	.00	
3593	549	414	18M	2913	25.8481	7.239	492	4	2	Ap	13	.14	3	My	12	.67	5	Je	11	.20	6	Jl	10	.73		1	Au	9		
3594	550	415	18M	5500	14.9564	3.396	493	6	6	Ap	2	.51	1	My	2	.04	2	My	31	.57	4	Je	30	.10		5	Jl	29		
3595	551	416	18M	8088	4.0647	27.108	494	7	3	Mr	22	.87	5	Ap	21	.40	{	6	My	20	.93	3	Jl	19	.00		4	Au	17	
																		1	Je	18	.46									
3596	552	417	19M	0675	22.7036	25.241	495	1	2	Ap	10	.77	4	My	10	.30	5	Je	8	.83	7	Jl	8	.36		1	Au	6		
3597	553	418	18M	3263	11.8119	21.398	496	2	7	Mr	30	.14	1	Ap	28	.67	3	My	28	.20	4	Je	26	.73		6	Jl	26		
3598	554	419	18M	5851	0.9202	17.556	497	4	4	Mr	19	.50	{	6	Ap	18	.04	2	Je	16	.10	3	Jl	15	.63		5	Au	14	
														7	My	17	.57													
3599	555	420	18M	8438	19.5591	15.689	498	5	3	Ap	7	.40	4	My	6	.93	6	Je	5	.46	7	Jl	4	.99		2	Au	3		
3600	556	421	19M	1026	8.6674	11.846	499	6	7	Mr	27	.77	2	Ap	26	.30	3	My	25	.83	5	Je	24	.36		6	Jl	23		
ARYA SIDDHANTA FROM 500 A.D. TO 999 A.D.																														
3601	557	422	18M	3611	27.28318	9.612	500	7	6	Ap	14	.65	1	My	14	.18	2	Je	12	.71	4	Jl	12	.24		5	Au	10	.00	
3602	558	423	18M	6198	16.39162	5.770	501	2	4	Ap	4	.02	5	My	3	.54	7	Je	2	.08	1	Jl	1	.61		3	Jl	31	.00	
3603	559	424	18M	8785	5.50004	1.928	502	3	1	Mr	24	.38	2	Ap	22	.91	{	4	My	22	.44	7	Jl	20	.50		2	Au	19	.00
																		5	Je	20	.97									
3604	560	425	19M	1371	24.13907	0.062	503	4	7	Ap	12	.28	1	My	11	.81	3	Je	10	.34	4	Jl	9	.87		6	Au	8		
3605	561	426	18M	3958	13.24751	23.774	504	5	4	Mr	31	.65	6	Ap	30	.18	7	My	29	.71	2	Je	28	.24		3	Jl	27		
3606	562	427	18M	6545	2.35594	19.932	505	7	2	Mr	21	.01	{	3	Ap	19	.54	5	Je	17	.61	1	Jl	17	.14		2	Au	15	
														5	My	19	.07													
3607	563	428	18M	9132	20.99497	18.066	506	1	7	Ap	8	.91	2	My	8	.44	3	Je	6	.97	5	Jl	6	.50		7	Au	5		
3608	564	429	19M	1719	10.10341	14.224	507	2	5	Mr	29	.28	6	Ap	27	.81	1	My	27	.34	2	Je	25	.87		4	Jl	25		
3609	565	430	18M	4305	28.74242	12.357	508	3	4	Ap	16	.18	5	My	15	.71	7	Je	14	.24	1	Jl	13	.77		3	Au	12		
3610	566	431	18M	6892	17.85086	8.515	509	5	1	Ap	5	.64	3	My	5	.07	4	Je	3	.60	6	Jl	3	.13		7	Au	10		
3611	567	432	18M	9479	6.95930	4.673	510	6	5	Mr	25	.91	7	Ap	24	.44	1	My	23	.97	{	3	Je	22	.50		6	Au	20	
																						5	Jl	22	.03					

N.B.—For Surya Siddhanta figures for **A.D. 500** to **A.D. 999** see pages **76—79** below.

Surya Siddhanta.

+ 147.65293	+ 177.18353	+ 206.71411	+ 236.24470		+ 265.77529		+ 295.30588	{ + 324.83647 + 354.36705 + 21.736 + 23.712	
+ 9.880	+ 11.856	+ 13.832	+ 15.806		+ 17.784		+ 19.760		
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra	
Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction		Week-day Month Day Fraction		Week-day Month Day Fraction	Week-day Month Day Fraction	
S 18 .74	4 O 18 .27	5 N 16 .80	7 D 16 .33	73	1 Jr 14 O .86		3 F 13 .39	4 Mr 14 .92	
S 8 .10	1 O 7 .63	3 N 6 .16	4 D 5 .70	74	6 Jr 4 O .23		7 F 2 .76	2 Mr 4 .29	
Au 28 .47	6 S 27 .00	7 O 26 .53	2 N 25 .06		3 D 24 O .59	75	5 Jr 23 .12	6 F 21 .65	
S 16 .37	4 O 15 .90	6 N 14 .43	7 D 13 .96	76	2 Jr 12 .49		4 F 11 .02	5 Mr 11 .55	
S 4 .74	2 O 4 .27	3 N 2 O .80	5 D 2 .33		6 D 31 .86	77	1 Jr 30 .39	2 F 28 .92	
Au 25 .10	6 S 23 .63	1 O 23 O .16	2 N 21 .69		4 D 21 .22	78	5 Jr 19 .76	7 F 18 .29	
S 13 .00	5 O 12 O .53	7 N 11 .06	1 D 10 .59	79	3 Jr 9 .12		4 F 7 .65	6 Mr 9 .18	
S 2 .37	2 O 1 .90	4 O 31 .43	5 N 29 .96		7 D 29 .49	80	2 Jr 28 .02	3 F 26 O .55	
Au 21 O .73	1 O 19 .80	3 N 18 .33	4 D 17 .86	81	6 Jr 16 .39		7 F 14 O .92	2 Mr 16 .45	
S 20 .26									
S 9 .63	6 O 9 .16	7 N 7 .69	2 D 7 .22	82	3 Jr 5 .75		5 F 4 O .28	6 Mr 5 .82	
Au 30 .00	3 S 28 .53	5 O 28 .06	6 N 26 .59		1 D 26 .12	83	2 Jr 24 .65	4 F 23 .18	
S 17 .90	2 O 17 .43	3 N 15 .96	5 D 15 O .49	84	7 Jr 14 .02		1 F 12 .55	3 Mr 13 .08	
S 6 .26	6 O 5 .79	1 N 4 .32	2 D 3 O .86	85	4 Jr 2 .39		5 Jr 31 .92	7 Mr 2 .45	
Au 26 .63	4 S 25 .16	5 O 24 .69	7 N 23 O .22		1 D 22 .75	86	3 Jr 21 .28	4 F 19 .81	
S 14 .53	3 O 14 .06	4 N 12 .59	6 D 12 .12	87	7 Jr 10 .65		2 F 9 .18	3 Mr 10 .71	
S 3 .90	7 O 3 O .43	1 N 1 .96	3 D 1 .49		5 D 31 .02	88	6 Jr 29 .55	1 F 28 .08	
Au 23 .26	{ 4 S 21 O .79	7 N 19 .85	Pausha Kshaya		2 D 19 .38	89	3 Jr 17 .92	{ 5 F 16 .45	
	6 O 21 .32							6 Mr 17 O .98	
S 11 O .16	3 O 10 .69	5 N 9 .22	6 D 8 .75	90	1 Jr 7 .28		2 F 5 .81	4 Mr 7 .34	
Au 31 .53	1 S 30 .06	2 O 29 .59	4 N 28 .12		5 D 27 .65	91	7 Jr 26 O .18	1 F 24 .71	
S 19 .42	6 O 18 .96	1 N 17 .49	3 D 17 .02	92	4 Jr 15 O .55		6 F 14 .08	7 Mr 14 .61	
S 7 .79	4 O 7 .32	5 N 5 .85	7 D 5 .38	93	1 Jr 3 O .91		3 F 2 .44	4 Mr 3 .98	
Au 28 .16	1 S 26 .69	3 O 26 .22	4 N 24 .75		6 D 24 .28	94	1 Jr 22 .81	2 F 21 .34	
S 16 .06	7 O 15 .59	2 N 14 O .12	3 D 13 .65	95	5 Jr 12 .18		6 F 10 .71	1 Mr 12 .24	
S 5 .42	4 O 4 .95	6 N 3 O .48	1 D 3 .02	96	2 Jr 1 .55		4 Jr 31 .08	5 F 29 .61	
Au 24 .79	2 S 23 .32	3 O 22 O .85	5 N 21 .38		6 D 20 .91	97	1 Jr 19 .44	2 F 17 .97	
S 12 .69	1 O 12 .22	2 N 10 .75	4 D 10 .28	98	5 Jr 8 .81		7 F 7 .34	1 Mr 8 O .87	
S 2 O .06	5 O 1 .59	7 O 31 .12	1 N 29 .65		3 D 29 .18	99	4 Jr 27 .71	6 F 26 O .24	
Au 22 O .42	4 O 20 .43	6 N 19 .01	7 D 18 .54	500	2 Jr 17 .06		3 F 15 O .59	5 Mr 16 .12	
S 20 .95									
S 9 .30	1 O 8 .83	3 N 7 .36	4 D 6 .89	01	6 Jr 5 .42		7 F 3 .95	2 Mr 5 .48	
Au 29 .67	6 S 28 .20	7 O 27 .73	2 N 26 .26		3 D 25 O .79	02	5 Jr 24 .32	6 F 22 .85	
S 17 .56	5 O 17 .10	6 N 15 .63	1 D 15 O .16	03	2 Jr 13 .69		4 F 12 .22	5 Mr 13 .75	
S 6 .93	2 O 6 .46	3 N 4 .99	5 D 4 O .52	04	7 Jr 3 .05		1 F 1 .58	3 Mr 2 .12	
Au 26 .30	6 S 24 .83	1 O 24 .36	2 N 22 .89		4 D 22 .42	05	5 Jr 20 .95	7 F 19 .48	
S 14 .20	5 O 13 O .73	7 N 12 .26	1 D 11 .79	06	3 Jr 10 .32		4 F 8 .79	6 Mr 10 .38	
S 3 .56	3 O 3 O .09	4 N 1 .62	6 D 1 .16		7 D 30 .69	07	2 Jr 29 .22	3 F 27 .75	
Au 23 .93	{ 7 S 22 O .46	3 N 20 .52	5 D 20 .05			08	{ 6 Jr 18 .58	2 Mr 17 .62	
	2 O 21 .99						1 F 17 .10		
S 10 .83	6 O 10 .36	7 N 8 .99	2 D 8 .42	09	3 Jr 6 .95		5 F 5 O .48	7 Mr 7 .01	
Au 31 .20	3 S 29 .73	5 O 29 .26	6 N 27 .79		1 D 27 .32	10	2 Jr 25 O .85	4 F 24 .38	
S 19 .09	2 O 18 .62	4 N 17 .15	5 D 16 .68	11	7 Jr 15 O .22		1 F 13 .75	3 Mr 15 .28	

TABLE X—

Kaliyuga	Vikrama Era	Saka Era	Month and day A.D.	Fraction of day	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom col. 6					☾'s Anom col. 7					☉'s Anom col. 6					☾'s Anom col. 7					☉'s Anom col. 6					☾'s Anom col. 7						
									+ 29°3059					+ 1°976					+ 59°06117					+ 88°59176					+ 118°12235					+ 7°904						
									Vaisakha					Jyeshtha					Ashada					Sravana					Bhadrapada											
Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	
3612	568	433	19M	·2066	25·59832	2·806	511	7	4	Ap	13	·81	6	My	13	·34	7	Je	11	·87	2	Jl	11	○	·40	3	Au	9	·93											
3613	569	434	18M	·4653	14·70676	26·518	512	1	2	Ap	2	·17	3	My	1	·70	5	My	31	○	·24	6	Je	29	●	·77	1	Jl	29	·30										
3614	570	435	18M	·7240	3·81519	22·677	513	3	6	Mr	22	·54	1	Ap	21	·07	2	My	20	○	·60	5	Jl	18	·66	6	Au	17	·19											
3615	571	436	18M	·9826	22·45421	20·810	514	4	5	Ap	10	·44	6	My	9	○	·97	1	Je	8	·50	3	Jl	8	·03	4	Au	6	·56											
3616	572	437	19M	·2413	11·56265	16·968	515	5	2	Mr	30	·81	4	Ap	29	·34	5	My	28	·87	7	Je	27	·40	1	Jl	26	·93												
3617	573	438	18M	·5000	0·67109	13·126	516	6	7	Mr	19	○	·17	3	My	17	·23	4	Je	15	·76	6	Jl	15	·30	7	Au	13	·83											
3618	574	439	18M	·7587	19·31011	11·260	517	1	6	Ap	7	●	·07	7	My	6	·60	2	Je	5	·13	3	Jl	4	·66	5	Au	3	·19											
3619	575	440	19M	·0174	8·41855	7·417	518	2	3	Mr	27	·44	4	Ap	25	·97	6	My	25	·50	1	Je	24	·03	2	Jl	23	·56												
3620	576	441	19M	·2760	27·05757	5·551	519	3	2	Ap	15	·34	3	My	14	·87	5	Je	13	·40	6	Jl	12	·93	1	Au	11	·46												
3621	577	442	18M	·5347	16·16600	1·709	520	4	6	Ap	3	·70	1	My	3	·23	2	Je	1	·76	4	Jl	1	○	·29	5	Jl	30	·82											
3622	578	443	18M	·7934	5·27444	25·421	521	6	4	Mr	24	·07	5	Ap	22	·60	7	My	22	·13	3	Jl	20	·19	4	Au	18	·72												
3623	579	444	19M	·0521	23·91347	23·555	522	7	2	Ap	11	·97	4	My	11	·50	6	Je	10	●	·03	7	Jl	9	·56	2	Au	8	·09											
3624	580	445	19M	·3108	13·02189	19·713	523	1	7	Ap	1	·33	1	Ap	30	○	·86	3	My	30	·40	4	Je	28	·93	6	Jl	28	·46											
3625	581	446	18M	·5694	2·13033	15·870	524	2	4	Mr	20	·70	6	Ap	19	○	·23	2	Je	17	·29	4	Jl	16	·82	5	Au	15	·35											
3626	582	447	18M	·8281	20·76936	14·004	525	4	3	Ap	8	○	·60	5	My	8	·13	6	Je	6	·66	1	Jl	6	·19	2	Au	4	·72											
3627	583	448	19M	·0868	9·87779	10·162	526	5	7	Mr	28	·97	2	Ap	27	·50	4	My	27	·03	5	Je	25	·56	7	Jl	25	·09												
3628	584	449	19M	·3455	28·51682	8·295	527	6	6	Ap	16	·86	1	My	16	·39	2	Je	14	·92	4	Jl	14	·46	5	Au	12	○	·99											
3629	585	450	18M	·6042	17·62526	4·453	528	7	4	Ap	5	·23	5	My	4	·76	7	Je	3	·29	1	Jl	2	·82	3	Au	1	○	·35											
3630	586	451	18M	·8628	6·73368	0·611	529	2	1	Mr	25	·60	3	Ap	24	·13	4	My	23	·66	6	Je	22	·19	2	Au	20	·25												
3631	587	452	19M	·1215	25·37271	26·299	530	3	7	Ap	13	·50	2	My	13	·03	3	Je	11	·56	5	Jl	11	·09	6	Au	9	·62												
3632	588	453	19M	·3802	14·48115	22·457	531	4	4	Ap	2	·86	6	My	2	·39	7	My	31	○	·92	2	Je	30	●	·45	3	Jl	29	·98										
3633	589	454	18M	·6389	3·58958	18·614	532	5	2	Mr	22	·23	3	Ap	20	·76	5	My	20	○	·29	1	Jl	18	·35	2	Au	16	·88											
3634	590	455	18M	·8976	22·22861	16·749	533	7	1	Ap	10	·13	2	My	9	●	·66	4	Je	8	·19	5	Jl	7	·72	7	Au	6	·25											
3635	591	456	19M	·1562	11·33705	12·906	534	1	5	Mr	30	○	·49	7	Ap	29	●	·02	1	My	28	·56	3	Je	27	·09	4	Jl	26	·62										
3636	592	457	19M	·4149	0·44547	9·064	535	2	2	Mr	19	○	·86	5	My	17	·92	7	Je	16	·45	1	Jl	15	·98	3	Au	14	·51											
3637	593	458	18M	·6736	19·08450	7·198	536	3	1	Ap	6	·76	3	My	6	·29	4	Je	4	·82	6	Jl	4	·35	7	Au	2	·88												
3638	594	459	18M	·9323	8·19294	3·356	537	5	6	Mr	27	·13	7	Ap	25	·66	2	My	25	·19	3	Je	23	·72	5	Jl	23	·25												
3639	595	460	19M	·1910	26·83226	1·490	538	6	5	Ap	15	·02	6	My	14	·55	1	Je	13	·08	2	Jl	18	○	·62	4	Au	11	·15											
3640	596	461	19M	·4496	15·94039	25·202	539	7	2	Ap	4	·39	3	My	3	·92	5	Je	2	·45	6	Jl	1	○	·98	1	Jl	31	·51											
3641	597	462	18M	·7083	5·04883	21·359	540	1	6	Mr	23	·76	1	Ap	22	·29	2	My	21	·82	5	Jl	19	·88	7	Au	18	·41												
3642	598	463	18M	·9670	23·68785	19·493	541	3	5	Ap	11	·66	7	My	11	○	·19	1	Je	9	●	·12	3	Jl	9	·25	4	Au	7	·78										
3643	599	464	19M	·2257	12·79629	15·651	542	4	3	Ap	1	·02	4	Ap	30	○	·55	6	My	30	·08	7	Je	28	·61	2	Jl	28	·14											
3644	600	465	19M	·4844	1·90473	11·809	543	5	7	Mr	21	·39	1	Ap	19	○	·92	4	Je	17	·95	6	Jl	17	·51	1	Au	16	·04											
3645	601	466	18M	·7430	20·54375	9·942																																		

N.B.—For Surya Siddhanta

rya Siddhanta.

+ 147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·30588	{ + 324·83647 + 354·36705 + 21·736 + 23·712																	
+ 9·880	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760																		
Aavina			Kartika			Margasira			Pausha			A.D.	Magha			A.D.	Phalguna			Chaitra			
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
S	8	·46	7 O	8	·09	1 N	6	·52	3 D	6	·05	12	4 Jr	4●	·58	13	6 F	3	·11	7 Mr	3	·64	
Au	27	·83	4 S	26	·36	5 O	25	·89	7 N	24○	·42		1 D	23	·95		3 Jr	22	·48	5 F	21	·01	
S	15	·72	3 O	15	·26	4 N	13○	·79	6 D	13	·32	14	7 Jr	11	·85		2 F	10	·38	3 Mr	11	·91	
S	5	·09	7 O	4	·62	2 N	3○	·15	3 D	2	·68	15	5 Jr	1	·21	16	6 Jr	30	·74	1 Mr	1	·28	
Au	25	·46	4 S	23	·99	6 O	23●	·52	1 N	22	·05		2 D	21	·58		4 Jr	20	·11	5 F	18	·64	
S	12○	·36	3 O	11	·89	5 N	10	·42	6 D	9	·95	17	1 Jr	8	·48		3 F	7	·01	4 Mr	8○	·54	
S	1○	·72	1 O	1	·25	2 O	30	·78	4 N	29	·32	19	5 D	28	·85	18	7 Jr	27	·38	1 F	25○	·91	
S	20	·62	7 O	20	·15	1 N	18	·68	3 D	18	·21			4 Jr	16	·74	6 F	15●	·27	7 Mr	16	·80	
S	9	·99	4 O	9	·52	6 N	8	·05	7 D	7	·58	20	2 Jr	6○	·11	21	3 F	4	·64	5 Mr	5	·17	
Au	29	·36	1 S	27	·89	3 O	27	·42	4 N	25	·95		6 D	25○	·48		1 Jr	24	·01	2 F	22	·54	
S	17	·25	7 O	16	·78	2 N	15	·31	3 D	14●○	·84	22	5 Jr	13	·38		7 F	11	·91	1 Mr	13	·44	
S	6	·62	5 O	6	·15	6 N	4	·68	1 D	4●	·21	23	2 Jr	2	·74	24	4 F	1	·27	5 Mr	2	·80	
Au	26	·99	2 S	25	·52	4 O	25○	·05	5 N	23●	·58		7 D	23	·11		1 Jr	21	·64	3 F	20	·17	
S	13	·88	1 O	13○	·42	2 N	11	·95	4 D	11	·48	25	6 Jr	10	·01		7 F	8	·54	2 Mr	10	·07	
S	3	·25	5 O	2○	·78	7 N	1	·31	1 N	30	·84	28	3 D	30	·37	26	4 Jr	28	·90	6 F	27	·44	
Au	23	·62	{ 3 S 4 O	22● 21	·15 ·68	6 N	20	·21	Pausha Kshaya					7 D	19	·74	27	{ 2 Jr 3 F	18 16○	·27 ·80	5 Mr	18	·33
S	11	·52		2 O	11	·05	3 N	9	·58	5 D	9		·11		6 Jr	7	·64			1 F	6●○	·77	2 Mr	6	·70
Au	30	·88	6 S	29	·41	7 O	28	·94	2 N	27	·48	30	4 D	27	·01	29	5 Jr	25○	·45	7 F	24	·07	
S	18	·78	5 O	18	·31	6 N	16	·84	1 D	16	·37			2 Jr	14●	·90		4 F	13	·43	5 Mr	14	·96
S	8	·15	2 O	7	·68	4 N	6	·21	5 D	5○	·74	31	7 Jr	4	·27	32	1 F	2	·80	3 Mr	4	·33	
Au	28	·52	7 S	27	·05	1 O	26	·58	3 N	25○	·11		4 D	24	·64		6 Jr	23	·17	7 F	21	·70	
S	15	·41	5 O	14	·94	7 N	13●○	·47	2 D	13	·00	33	3 Jr	11	·54		5 F	10	·07	6 Mr	11	·60	
S	4	·78	3 O	4	·31	4 N	2	·84	6 D	2	·37	36	7 D	31	·90	34	2 Jr	30	·43	3 F	28	·96	
Au	25	·15	7 S	23○	·68	2 O	23●	·21	3 N	21	·74			5 D	21	·27	35	6 Jr	19	·80	1 F	18	·33
S	13●○	·04	6 O	12	·58	1 N	11	·11	2 D	10	·64			4 Jr	9	·17		5 F	7	·70	7 Mr	8○	·23
S	1○	·41	3 S	30	·94	5 O	30	·47	7 N	29	·00	38	1 D	28	·53	37	3 Jr	27	·06	4 F	25	·60	
S	20	·31	2 O	19	·84	4 N	18	·37	5 D	17	·90			7 Jr	16○	·43		1 F	14●	·96	3 Mr	16	·49
S	9	·68	7 O	9	·21	1 N	7	·74	3 D	7	·27	39	4 Jr	5○	·80	40	6 F	4	·38	7 Mr	5	·86	
Au	30	·04	4 S	28	·57	6 O	28	·10	7 N	26	·64		2 D	26●○	·17		3 Jr	24	·70	5 F	23	·23	
S	16	·94	3 O	16	·47	5 N	15	·00	6 D	14●	·53	41	1 Jr	13	·06			2 F	11	·59	4 Mr	13	·12
S	6	·31	7 O	5	·84	2 N	4○	·37	3 D	3	·90	42	5 Jr	2	·43	43	6 Jr	31	·96	1 Mr	2	·49	
Au	26	·68	5 S	25	·21	6 O	24○	·74	1 N	23	·27		2 D	22	·80		4 Jr	21	·33	5 F	19	·86	
S	14	·57	4 O	14●○	·10	5 N	12	·63	7 D	12	·16	44	1 Jr	10	·70			3 F	9	·23	4 Mr	9	·76
S	2	·94	1 O	2	·47	3 N	1	·00	4 N	30	·53	47	6 D	30	·06	45	7 Jr	28	·59	2 F	27○	·12	
Au	23○	·31	{ 5 S 7 O	21● 21	·84 ·37	1 N	19	·90	Pausha Kshaya					3 D	19	·43	46	{ 4 Jr 6 F	17 16○	·96 ·49	1 Mr	18	·02
S	11	·20		4 O	10	·74	6 N	9	·27	7 D	8		·80		2 Jr	7	·32			3 F	5●○	·86	5 Mr	7	·39
Au	31	·55	2 S	30	·10	3 O	29	·63	5 N	28	·16	49	6 D	27	·69	48	1 Jr	26	·22	2 F	24	·76	
S	18	·47	1 O	18	·00	2 N	16	·53	4 D	16○	·06			5 Jr	14	·59		7 F	13	·12	1 Mr	14	·65
S	7	·80	5 O	7	·37	6 N	5	·90	1 D	5●○	·43	50	2 Jr	3	·96		4 F	2	·49	6 Mr	4	·02	

TABLE X—

[illegible]

N.B.—For Surya Siddhanta figures for **A.D. 500** to **A.D. 999** see pages **76—79** below.

ya Siddhanta.

147·65293	+ 177·18353	+ 206·71411	+ 236·24470		+ 265·77422		+ 295·30588	{ + 324·83647 + 354·36705 + 21·736 + 23·712																					
9·880	+ 11·856	+ 13·832	+ 15·808		+ 17·784		+ 19·760																						
Asvina				Kartika				Margasira				Pausha				A.D.	Magha				A.D.	Phalguna				Chaitra			
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction			
Au	28	·20	2 S	26	·73	4 O	26	·26	5 N	24●○	·80																		
S	16	·14	1 O	15	·63	3 N	14	·16	4 D	13	·69	52	6 Jr	12	·22	51	7 F	10	·75	2 Mr	11	·28							
S	4	·47	6 O	4○	·00	7 N	2	·53	2 D	2	·06		3 D	31	·59	53	5 Jr	30	·12	6 F	28	·65							
Au	24	·84	3 S	23○	·37	4 O	22	·90	6 N	21	·43		7 D	20	·96	54	2 Jr	19	·49	4 F	18	·02							
S	12○	·73	2 O	12	·26	3 N	10	·79	5 D	10	·32	55	6 Jr	8	·86		1 F	7	·39	2 Mr	8●	·92							
S	2	·10	6 O	1	·63	1 O	31	·16	2 N	29	·69		4 D	29	·22	56	5 Jr	27○	·75	7 F	26	·28							
S	20	·00	5 O	19	·53	7 N	18	·06	1 D	17	·59	57	3 Jr	16○	·12		4 F	14	·65	6 Mr	16	·18							
S	9	·36	2 O	8	·90	4 N	7	·43	5 D	6	·96	58	7 Jr	5○	·49		2 F	4	·02	3 Mr	5	·55							
Au	29	·73	7 S	28	·25	1 O	27	·79	3 N	26	·32		4 D	25	·85	59	6 Jr	24	·38	7 F	22	·92							
S	17	·63	6 O	17	·15	7 N	15○	·69	2 D	15	·22	60	3 Jr	13	·75		5 F	12	·28	6 Mr	12	·81							
S	6	·00	3 O	5	·53	5 N	4○	·06	6 D	3●	·59	61	1 Jr	2	·12		2 Jr	31	·65	4 Mr	2	·18							
Au	26	·36	7 S	24	·89	2 O	24○	·42	3 N	22	·96		5 D	22	·49	62	7 Jr	21	·02	4 F	19	·55							
S	14	·26	6 O	13●	·79	1 N	12	·32	2 D	11	·85	63	4 Jr	10	·38		5 F	8	·91	7 Mr	10○	·44							
S	3○	·63	4 O	3●	·16	5 N	1	·69	7 D	1	·22		1 D	30	·75	64	3 Jr	29	·28	4 F	27○	·81							
Au	22○	·99	3 O	21	·05	5 N	19	·58	Pausha Kshaya					6 D	19	·12	65	7 Jr	17	·65	3 Mr	17	·71						
S	21	·52																											
S	10	·89	7 O	10	·42	1 N	8	·95	3 D	8	·48	66	5 Jr	7	·01		6 F	5●	·54	1 Mr	7	·07							
Au	31	·26	4 S	29	·79	6 O	29	·32	7 N	27	·85		2 D	27○	·38	67	4 Jr	25	·91	5 F	24	·44							
S	19	·16	3 O	18	·69	5 N	17	·22	6 D	16○	·75	68	1 Jr	15	·28		2 F	13	·81	4 Mr	14	·34							
S	7	·20	1 O	7	·05	2 N	5	·59	4 D	5○	·12	69	5 Jr	3	·64		7 F	2	·18	1 Mr	3	·18							
Au	27	·89	5 S	26	·42	6 O	25	·95	1 N	24●	·48		3 D	24	·01	70	4 Jr	22	·54	6 F	21	·07							
S	15	·79	4 O	15○	·32	5 N	13	·85	7 D	13	·38	71	1 Jr	11	·91		3 F	10	·44	4 Mr	11	·97							
S	5	·15	1 O	4○	·68	3 N	3	·21	4 D	2	·75	72	6 Jr	1	·28		7 Jr	30	·81	2 F	29	·34							
Au	24	·52	6 S	23●○	·06	7 O	22	·58	2 N	21	·11		3 D	20	·64	73	5 Jr	19	·17	6 F	17	·70							
S	12●	·42	4 O	11	·95	6 N	10	·48	1 D	10	·01	74	2 Jr	8	·54		4 F	7○	·07	5 Mr	8●	·60							
S	1●	·79	2 O	1	·32	3 O	30	·85	5 N	29	·38		6 D	28	·91	75	1 Jr	27○	·44	2 F	25	·97							
S	20	·68	1 O	20	·23	2 N	18	·74	4 D	18	·27	76	5 Jr	16○	·81		7 F	15	·34	1 Mr	15	·87							
S	9	·05	5 O	8	·58	7 N	7	·11	1 D	6	·64	77	3 Jr	5●	·17		4 F	3	·70	6 Mr	5	·20							
Au	29	·42	2 S	27	·95	4 O	27	·48	6 N	26○	·01		7 D	25●	·54	78	2 Jr	24	·07	3 F	22	·63							
S	17	·31	1 O	16	·85	3 N	15○	·38	4 D	14	·91	79	6 Jr	13	·44		7 F	11	·97	2 Mr	13	·50							
S	6	·63	6 O	6	·21	7 N	4○	·74	2 D	4	·27	80	3 Jr	2	·80		5 F	1	·33	6 Mr	1	·87							
Au	26	·05	3 S	24	·58	5 O	24●	·11	6 N	22	·64		1 D	22	·17	81	2 Jr	20	·70	4 F	19	·23							
S	13○	·95	2 O	13	·48	4 N	12	·01	5 D	11	·54	82	7 Jr	10	·07		1 F	8	·60	3 Mr	10○	·13							
S	3○	·31	6 O	2	·84	1 N	1	·37	2 N	30	·91		4 D	30	·44	83	6 Jr	28	·97	7 F	27○	·50							
S	22	·21	5 O	21	·74	7 N	20	·27	1 D	19	·50	84	3 Jr	18	·33		4 F	16●	·86	6 Mr	17	·39							
S	10	·58	3 O	10	·11	4 N	8	·64	6 D	8	·17	85	7 Jr	6○	·70		2 F	5	·23	3 Mr	6	·76							
Au	30	·95	7 S	29	·48	2 O	29	·01	3 N	27	·54		5 D	27○	·07	86	6 Jr	25	·60	1 F	24	·13							
S	18	·84	6 O	18	·37	7 N	16	·90	2 D	16●○	·39	87	3 Jr	14	·97		5 F	13	·50	7 Mr	15	·03							
S	8	·21	3 O	7	·74	5 N	6	·27	6 D	5	·80	88	1 Jr	4	·33		2 F	2	·86	4 Mr	3	·39							
Au	27	·58	1 S	26	·11	3 O	25○	·64	4 N	24	·17		5 D	23	·70	89	7 Jr	22	·23	1 F	20	·76							

TABLE X-

[illegible]

N.B.—For Surya Siddhanta figures for **A.D. 500** to **A.D. 999** see pages **76—79** below.

rya Siddhanta.

+ 147·65293				+ 177·18353				+ 206·71411				+ 236·24470				+ 265·77529				+ 295·30588				{ +324·93647 +354·36705 + 21·736 + 23·712											
+ 9·880				+ 11·856				+ 13·832				+ 15·808				+ 17·784				+ 19·760															
Asvina				Kartika				Margasira				Pausha				A.D.				Magha				A.D.				Phalguna				Chaitra			
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction							
S	15	·47	7 O	15●○	·01	1 N	13	·54	3 D	13	·07	90	4 Jr	11	·60		6 F	10	·13	7 Mr	11	·66													
S	4	·84	4 O	4●○	·37	5 N	2	·90	7 D	2	·43		2 D	31	·96	91	3 Jr	30	·49	5 Mr	1	·03													
Au	25	·21	1 S	23●	·74	3 O	23	·27	4 N	21	·80		6 D	21	·33	92	7 Jr	19	·86	2 F	18○	·39													
S	12	·11	7 O	11	·64	2 N	10	·17	3 D	9	·70	93	5 Jr	8	·23		6 F	6○	·76	1 Mr	8	·29													
S	1	·47	5 O	1	·00	6 O	30	·53	1 N	29	·07		2 D	28	·60	94	4 Jr	27●○	·13	5 F	25	·66													
S	20	·37	3 O	19	·90	5 N	18	·43	6 D	17	·96	95	1 Jr	16●	·55		3 F	15	·02	4 Mr	16	·55													
S	9	·74	1 O	9	·27	2 N	7	·80	4 D	7○	·33	96	5 Jr	5	·86		7 F	4	·39	1 Mr	4	·92													
Au	29	·12	5 S	27	·64	7 O	27	·17	1 N	25○	·70		3 D	25●	·23	97	4 Jr	23	·76	6 F	22	·29													
S	17	·00	4 O	16	·53	6 N	15○	·06	7 D	14	·59	98	2 Jr	13	·13		3 F	11	·66	5 Mr	13	·19													
S	6	·37	1 O	5	·90	3 N	4	·43	4 D	3	·96	99	6 Jr	2	·49		1 F	1	·02	2 Mr	2	·55													
Au	26	·74	6 S	25○	·27	7 O	24	·80	2 N	23	·33		6 D	22	·86	000	5 Jr	21	·39	6 F	19	·92													
S	13○	·64	5 O	13	·17	6 N	11	·70	1 D	11	·23	01	2 Jr	9	·77		4 F	8	·30	5 Mr	9●○	·83													
S	3○	·01	2 O	2	·54	4 N	1	·07	5 N	30	·60		7 D	30	·13	02	1 Jr	28	·66	3 F	27	·12													
S	21	·91	1 O	21	·44	2 N	19	·97	4 D	19	·50	03	6 Jr	18○	·03		7 F	16	·56	2 Mr	18	·09													
S	11	·27	5 O	10	·81	7 N	9	·34	1 D	8	·87	04	3 Jr	7●○	·40		4 F	5	·93	6 Mr	6	·46													
Au	30	·64	3 S	29	·17	4 O	28	·70	6 N	27	·23		7 D	26●○	·16	05	2 Jr	25	·29	3 F	23	·83													
S	18	·54	2 O	18	·07	3 N	16	·60	5 D	16	·13	06	6 Jr	14	·66		1 F	13	·19	2 Mr	14	·72													
S	7	·91	6 O	7	·44	7 N	5○	·97	2 D	5	·50	07	4 Jr	4	·03		5 F	2	·56	7 Mr	4	·09													
Au	28	·27	3 S	26	·80	5 O	26○	·33	6 N	24	·87		1 D	24	·40	08	2 Jr	22	·93	4 F	21	·46													
S	15	·17	2 O	14○	·70	4 N	13	·23	5 D	12	·76	09	7 Jr	11	·29		7 F	9	·82	3 Mr	11	·35													
S	4	·54	7 O	4	·07	1 N	2	·60	3 D	2	·13		4 D	31	·66	10	5 Jr	30	·19	7 F	28○	·72													
Au	24○	·91	{ 4 S 5 O	23	·44	Margasira Kshaya				7 N	21	·50		2 D	21	·03	11	3 Jr	19	·56	5 F	18○	·09												
S	12	·80		22	·97					4 N	10	·86	6 D	10	·39	12	7 Jr	8	·93		2 F	7○	·46	3 Mr	7	·99									
S	1	·17	7 S	30	·70	2 O	30	·23	3 N	28	·76		5 D	28	·29	13	6 Jr	26	·82	1 F	25	·35													
S	20	·07	6 O	19	·60	1 N	18	·13	2 D	17○	·66	14	4 Jr	16	·19		5 F	14	·72	7 Mr	16	·25													
S	9	·43	3 O	8	·97	5 N	7	·50	7 D	7○	·03	15	1 Jr	5	·56		3 F	4	·09	4 Mr	5	·62													
Au	29	·80	1 S	28	·33	2 O	27	·86	4 N	26○	·39		5 D	25	·92	16	7 Jr	24	·45	2 F	23	·98													
S	16	·70	7 O	16	·23	1 N	14●	·76	3 D	14	·29	17	4 Jr	12	·82		6 F	11	·35	7 Mr	12	·88													
S	6	·07	4 O	5○	·60	6 N	4●	·13	7 D	3	·66	18	2 Jr	2	·19		3 Jr	31	·72	5 Mr	2	·25													
Au	26	·43	1 S	24○	·96	3 O	24●	·49	5 N	23	·03		6 D	22	·56	19	1 Jr	21	·19	2 F	19	·62													
S	14○	·33	7 O	13	·86	2 N	12	·39	3 D	11	·92	20	5 Jr	10	·45		6 F	8	·98	1 Mr	9●	·51													
S	2●	·70	5 O	2	·23	6 O	31	·76	1 N	30	·29		2 D	29	·82	21	4 Jr	28○	·35	5 F	26	·88													
S	21	·60	4 O	21	·13	5 N	19	·66	7 D	19	·19	22	1 Jr	17○	·72		3 F	16	·25	4 Mr	17	·78													
S	10	·96	1 O	10	·49	3 N	9	·12	4 D	8	·55	23	6 Jr	7○	·09		7 F	5	·62	2 Mr	7	·15													
Au	31	·33	5 S	29	·86	7 O	29	·39	1 N	27	·92		3 D	27●	·45	24	4 Jr	25	·98	6 F	24	·51													
S	18	·23	4 O	17	·73	6 N	16○	·29	7 D	15●	·82	25	2 Jr	14	·35		3 F	12	·88	5 Mr	14	·41													
S	7	·60	2 O	7	·13	3 N	5○	·66	5 D	5	·19	26	6 Jr	3	·72		1 F	2	·25	2 Mr	3	·78													
Au	27	·96	6 S	26	·49	1 O	26●○	·02	2 N	24	·55		4 D	24	·08	27	5 Jr	22	·67	7 F	21	·15													

TABLE X

[illegible]

N.B.—For Surya Siddhanta figures for **A.D. 500 to A.D. 999** see pages **76—79** below.

8

Kaliyuga.	Vikrama Era.	Saka Era	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.				☉'s Anom col. 6				☾'s Anom col. 7				+ 29-53059				+ 59-06117				+ 88-59176				+ 118-12235			
							Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada											
							Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
3767	723	588	20M	·3021	20-64934	15-871	666	5	5	Ap	9	·95	7	My	9	·48	2	Je	8	·01	3	Jl	7	·54	5	Au	6	·0						
3768	724	589	20M	·5608	9-75779	12-029	667	6	3	Mr	30	·32	4	Ap	28	·85	6	My	28	·38	7	Je	26	·91	2	Jl	26	·4						
3769	725	590	19M	·8194	28-39681	10-163	668	7	2	Ap	17	·21	3	My	16	·75	5	Je	15	·28	6	Jl	14	·81	1	Au	13	·3						
3770	726	591	20M	·0781	17-50524	6-320	669	2	6	Ap	6	·58	1	My	6	·11	2	Je	4	·64	4	Jl	4	·17	5	Au	2	·7						
3771	727	592	20M	·3368	6-61368	2-478	670	3	3	Mr	26	·95	5	Ap	5	·48	7	My	25	·01	1	Je	23	·54	4	Au	21	·6						
3772	728	593	20M	·5955	25-25280	0-612	671	4	2	Ap	14	·85	4	My	14	·38	5	Je	12	·91	7	Jl	12	·44	1	Au	10	·9						
3773	729	594	19M	·8542	14-36113	24-324	672	5	7	Ap	3	·21	1	My	20	·74	3	Je	1	·27	4	Je	30	·81	6	Jl	30	·3						
3774	730	595	20M	·1128	3-46957	20-483	673	7	4	Mr	23	·58	6	Ap	22	·11	7	My	21	·64	3	Jl	19	·70	5	Au	18	·2						
3775	731	596	20M	·3715	22-10860	18-616	674	1	3	Ap	11	·48	5	My	11	·01	6	Je	9	·54	1	Jl	9	·07	2	Au	7	·6						
3776	732	597	20M	·6302	11-21703	14-773	675	2	7	Mr	31	·85	2	Ap	30	·38	3	My	29	·91	5	Je	28	·44	6	Jl	27	·9						
3777	733	598	19M	·8889	0-32546	10-931	676	3	5	Mr	20	·21	1	My	18	·27	2	Je	16	·80	4	Jl	16	·33	6	Au	14	·8						
3778	734	599	20M	·1476	18-96449	9-065	677	5	4	Ap	8	·11	5	My	7	·64	7	Je	6	·17	1	Jl	5	·70	3	Au	4	·2						
3779	735	600	20M	·4062	8-07292	5-223	678	6	1	Mr	28	·48	3	Ap	27	·01	4	My	26	·54	6	Je	25	·07	7	Jl	24	·6						
3780	736	601	20M	·6649	26-71195	3-356	679	7	7	Ap	16	·37	1	My	15	·91	3	Je	14	·44	4	Jl	13	·97	6	Au	12	·5						
3781	737	602	19M	·9236	15-82039	27-069	680	1	4	Ap	4	·74	6	My	4	·27	7	Je	2	·80	2	Jl	2	·33	3	Jl	31	·8						
3782	738	603	20M	·1823	4-92882	23-226	681	3	2	Mr	25	·11	3	Ap	23	·64	5	My	23	·17	1	Jl	21	·23	2	Au	19	·7						
3783	739	604	20M	·4410	23-56784	21-360	682	4	1	Ap	13	·01	2	My	12	·54	4	Je	11	·07	5	Jl	10	·60	7	Au	9	·1						
3784	740	605	20M	·6996	12-67628	17-518	683	5	5	Ap	2	·37	6	My	1	·90	1	My	31	·43	2	Je	29	·97	4	Jl	29	·5						
3785	741	606	19M	·9583	1-78471	13-676	684	6	2	Mr	21	·74	4	Ap	20	·27	7	Je	18	·33	1	Jl	17	·86	3	Au	16	·3						
3786	742	607	20M	·2170	20-42374	11-809	685	1	1	Ap	9	·64	3	My	9	·17	4	Je	7	·70	6	Jl	7	·23	7	Au	5	·7						
3787	743	608	20M	·4757	9-53218	7-967	686	2	6	Mr	30	·01	7	Ap	28	·54	2	My	28	·07	3	Je	26	·60	5	Jl	26	·1						
3788	744	609	20M	·7344	28-17119	6-101	687	3	4	Ap	17	·90	6	My	17	·43	7	Je	15	·96	2	Jl	15	·49	4	Au	14	·0						
3789	745	610	19M	·9930	17-27963	2-259	688	4	2	Ap	6	·27	3	My	5	·80	5	Je	4	·33	6	Jl	3	·86	1	Au	2	·3						
3790	746	611	20M	·2517	6-38807	25-971	689	6	6	Mr	26	·64	1	Ap	25	·17	2	My	24	·70	4	Je	23	·23	7	Au	21	·2						
3791	747	612	20M	·5104	25-02709	24-105	690	7	5	Ap	14	·53	7	My	14	·07	1	Je	12	·60	3	Jl	12	·13	4	Au	10	·6						
3792	748	613	20M	·7691	14-13553	20-262	691	1	2	Ap	3	·90	4	My	3	·43	5	Je	1	·96	7	Jl	1	·49	2	Jl	31	·0						
3793	749	614	20M	·0278	3-24397	16-420	692	2	7	Mr	23	·27	1	Ap	21	·80	3	My	21	·33	6	Jl	19	·39	7	Au	17	·9						
3794	750	615	20M	·2864	21-88298	14-554	693	4	6	Ap	11	·17	7	My	10	·70	2	Je	9	·23	3	Jl	8	·76	5	Au	7	·2						
3795	751	616	20M	·5451	10-99142	10-712	694	5	3	Mr	31	·53	5	Ap	30	·06	6	My	29	·59	1	Je	28	·13	2	Jl	27	·6						
3796	752	617	20M	·8038	0-09985	6-869	695	6	2	Ap	19	·43	3	My	18	·96	5	Je	17	·49	7	Jl	17	·02	1	Au	15	·5						
3797	753	618	20M	·0625	18-73888	5-003	696	7	6	Ap	7	·80	1	My	7	·33	2	Je	5	·86	4	Jl	5	·39	5	Au	3	·9						
3798	754	619	20M	·3212	7-84732	1-161	697	2	4	Mr	28	·17	5	Ap	26	·70	7	My	26	·23	1	Je	24	·76	4	Au	22	·8						
3799	755	620	20M	·5798	26-48634	26-849	698	3	3	Ap	16	·06	4	My	15	·59	6	Je	14	·12	7	Jl	13	·65	2	Au	12	·1						
3800	756	621	20M	·8385	15-59477	23-007	699	4	7	Ap	5	·43	1	My	4	·96	3	Je	3	·49	5	Jl	3	·02	6	Au	1	·5						
3801	757	622	20M	·0972	4-70321	19-164	700	5	4	Mr	24	·80	6	Ap	23	·33	7	My	22	·86	3	Jl	20	·92	5	Au	19	·4						
3802	758	623	20M	·3559	23-34224	17-288	701	1	3	Ap	12	·70	5	My	12	·23	6	Je	10	·76	1	Jl	10	·29	2	Au	8	·8						
3803	759	624	20M	·6146	12-45066	13-456	702	1	1	Ap	2	·07	2	My	1	·60	4	My	31	·13	5	Je	29	·66	7	Jl	29	·1						
3804	760	625	20M	·8733	1-55910	9-614	703	2	5	Mr	22	·43	6	Ap	20	·97	3	Je	19	·03	4	Jl	18	·56	6	Au	17	·0						

N.B.—For Surya Siddhanta figures for A.D. 500 to A.D. 999 see pages 76—79 below.

Siddhanta.

147.65293	+ 177.18353	+ 206.71411	+ 236.24470	+ 265.77529	+ 295.30588	+ 324.83647																	
9.880	+ 11.856	+ 13.832	+ 15.808	+ 17.784	+ 19.760	+ 21.736																	
						+ 23.712																	
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra															
Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction										
40	.60	1 O		4	.13	2 N	2	.66	4 D	2	.19			5 D	31	.73	67	7 Jr	30	.26	1 F	28	.79
24	.97	5 S		23	.50	1 N	21	.56	3 D	21	.09	68	4 Jr	490	.62			6 F	18	.15	7 Mr	18	.68
		7 O		23	.03																		
11	.87	4 O		11	.40	6 N	9	.93	7 D	9	.46	69	2 Jr	80	.09			3 F	6	.52	5 Mr	8	.05
1	.23	1 S		30	.77	3 O	30	.30	4 N	28	.83	71	6 D	280	.36	70	7 Jr	26	.89	2 F	25	.42	
20	.13	7 O		19	.66	2 N	18	.19	3 D	17	.72		5 Jr	16	.25			6 F	14	.79	1 Mr	16	.32
9	.50	5 O		9	.03	6 N	70	.56	1 D	7	.09	72	2 Jr	5	.62			4 F	4	.15	5 Mr	4	.68
28	.87	2 S		27	.40	3 O	260	.93	5 N	25	.46	74	6 D	24	.99	73	1 Jr	23	.52	3 F	22	.05	
16	.76	1 O		160	.29	2 N	14	.83	4 D	14	.36		5 Jr	12	.89			7 F	11	.42	1 Mr	12	.95
6	.13	5 O		5	.66	7 N	4	.19	1 D	3	.72	75	3 Jr	2	.25			4 Jr	31	.78	6 Mr	20	.31
260	.50	3 S		25	.03	4 O	24	.56	6 N	23	.09	77	7 D	22	.62	76	2 Jr	21	.15	3 F	190	.68	
13	.40	1 O		12	.93	3 N	11	.46	4 D	10	.99		6 Jr	9	.52			1 F	80	.05	2 Mr	9	.58
2	.76	6 O		2	.29	7 O	31	.82	2 N	30	.35		3 D	29	.89	78	5 Jr	28	.42	6 F	26	.95	
21	.66	5 O		21	.19	6 N	19	.72	1 D	190	.25	79	2 Jr	17	.78			4 F	16	.31	5 Mr	17	.85
11	.03	2 O		10	.56	4 N	9	.09	5 D	80	.62	80	7 Jr	7	.15			1 F	5	.68	3 Mr	6	.21
30	.39	6 S		28	.93	1 O	28	.46	2 N	260	.99	82	4 D	26	.52	81	6 Jr	25	.05	7 F	23	.58	
18	.29	5 O		17	.82	7 N	16	.35	1 D	15	.88		3 Jr	14	.41			4 F	12	.95	6 Mr	14	.48
7	.66	3 O		70	.19	4 N	5	.72	6 D	5	.25	83	7 Jr	3	.78			2 F	2	.31	3 Mr	3	.84
28	.03	7 S		260	.56	2 O	26	.09	3 N	24	.62	85	5 D	24	.15	84	6 Jr	22	.68	1 F	21	.21	
140	.92	6 O		14	.45	7 N	12	.99	2 D	12	.52		4 Jr	11	.05			5 F	9	.58	7 Mr	11	.11
4	.29	3 O		3	.82	5 N	2	.35	6 D	1	.88		1 D	31	.41	86	2 Jr	290	.94	4 F	28	.47	
24	.68	1 S		23	.19	4 N	21	.25	5 D	20	.78	87	7 Jr	190	.31			1 F	17	.84	3 Mr	19	.37
		2 O		22	.72																		
12	.56	7 O		12	.09	1 N	10	.62	3 D	10	.15	88	4 Jr	80	.68			6 F	7	.21	7 Mr	7	.74
31	.92	4 S		30	.45	5 O	29	.98	7 N	28	.51	90	2 D	28	.05	89	3 Jr	26	.50	5 F	25	.11	
19	.82	3 O		19	.35	4 N	170	.88	6 D	17	.41		7 Jr	15	.94			2 F	14	.47	4 Mr	16	.00
9	.19	7 O		8	.72	2 N	70	.75	3 D	6	.78	91	5 Jr	5	.31			6 F	3	.84	1 Mr	5	.37
29	.55	5 S		28	.09	6 O	270	.62	1 N	26	.15	93	2 D	25	.68	92	4 Jr	24	.21	5 F	22	.74	
16	.45	4 O		15	.98	5 N	14	.51	7 D	14	.04		1 Jr	12	.57			3 F	11	.11	4 Mr	120	.64
50	.82	1 O		5	.35	2 N	3	.88	4 D	3	.41	94	5 Jr	1	.94			7 Jr	31	.47	2 Mr	20	.00
260	.19	5 S		24	.72	7 O	24	.25	1 N	22	.78		3 D	22	.31	95	4 Jr	20	.84	6 F	190	.37	
14	.80	4 O		13	.61	6 N	12	.15	7 D	11	.68	96	2 Jr	10	.21			3 F	8	.74	5 Mr	9	.27
2	.45	1 O		1	.98	3 O	31	.51	5 N	30	.04	98	6 D	290	.57	97	1 Jr	28	.10	2 F	26	.63	
21	.35	7 O		20	.88	2 N	19	.41	3 D	180	.94		5 Jr	17	.47			7 F	16	.00	1 Mr	17	.53
10	.72	5 O		10	.25	6 N	8	.78	1 D	80	.31	99	2 Jr	6	.84			4 F	5	.37	5 Mr	6	.90
31	.08	2 S		29	.61	4 O	29	.14	5 N	27	.67	01	7 D	27	.21	700	1 Jr	25	.74	3 F	24	.27	
17	.98	1 O		170	.51	3 N	16	.04	4 D	15	.57		6 Jr	14	.11			7 F	12	.64	2 Mr	14	.17
7	.35	5 O		60	.88	7 N	5	.41	1 D	4	.94	02	3 Jr	3	.47			5 F	2	.01	6 Mr	3	.54
27	.72	3 S		260	.25	4 O	25	.78	6 N	24	.31		7 D	23	.84	03	2 Jr	22	.37	3 F	20	.90	
15	.62	2 O		15	.15	3 N	13	.68	5 D	13	.21	04	6 Jr	11	.84			1 F	100	.27	2 Mr	10	.80

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D.	Fraction of day.	First New-Moon in Solar Year	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom col. 6					☉'s Anom col. 7					☉'s Anom col. 8					☉'s Anom col. 9									
										+ 29°53'059					+ 1°9'76					+ 3°9'52					+ 5°9'28					+ 7°30'4				
										Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada								
										Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day						
3805	761	626	20M	1319	20-19813	7-747	704	3	4	Ap	9	33	5	My	8	86	7	Je	7	39	1	Jl	6	92	3	Au	50							
3806	762	627	20M	3906	9-30656	3-905	705	5	1	Mr	29	70	3	Ap	28	23	4	My	27	76	6	Je	26	29	7	Jl	25							
3807	763	628	20M	6493	27-94559	2-039	706	6	7	Ap	17	60	2	My	17	13	3	Je	15	66	5	Jl	15	19	6	Au	13							
3808	764	629	20M	9080	17-05403	25-751	707	7	4	Ap	6	96	6	My	6	49	1	Je	5	03	3	Jl	4	56	4	Au	3							
3809	765	630	20M	1667	6-16245	21-909	708	1	2	Mr	26	33	3	Ap	24	86	5	My	24	39	6	Je	22	92	2	Au	20							
																					1	Jl	22	45										
3810	766	631	20M	4253	24-80148	20-043	709	3	1	Ap	14	23	2	My	13	76	4	Je	12	29	5	Jl	11	82	7	Au	10							
3811	767	632	20M	6840	13-90992	16-201	710	4	5	Ap	3	60	7	My	30	13	1	Je	1	66	3	Jl	1	19	4	Jl	30							
3812	768	633	20M	9427	3-019835	12-358	711	5	2	Mr	23	96	4	Ap	22	49	6	My	22	02	2	Jl	20	09	3	Au	18							
																					7	Je	20	55										
3813	769	634	20M	2014	21-65738	10-492	712	6	1	Ap	10	86	3	My	10	39	4	Je	8	92	6	Jl	8	45	7	Au	6							
3814	770	635	20M	4601	10-76581	6-650	713	1	6	Mr	31	23	7	Ap	29	76	2	My	29	29	3	Je	27	82	5	Jl	27							
3815	771	636	20M	7187	29-40483	4-784	714	2	5	Ap	19	13	6	My	18	66	1	Je	17	19	2	Jl	16	72	4	Au	15							
3816	772	637	20M	9774	18-51327	0-941	715	3	2	Ap	8	49	4	My	8	02	5	Je	6	55	7	Jl	6	08	1	Au	4							
3817	773	638	20M	2361	7-62171	24-653	716	4	6	Mr	27	86	1	Ap	26	39	2	My	25	92	4	Je	24	45	7	Au	22							
																					5	Jl	23	98										
3818	774	639	20M	4948	26-26073	22-788	717	6	5	Ap	15	76	7	My	15	28	1	Je	13	82	3	Jl	13	35	4	Au	11							
3819	775	640	20M	7535	15-36907	18-945	718	7	3	Ap	5	12	4	My	4	65	6	Je	3	19	7	Jl	2	72	2	Au	1							
3820	776	641	21M	0121	4-47760	15-103	719	1	7	Mr	25	49	2	Ap	24	02	3	My	23	55	6	Jl	21	61	1	Au	20							
																					5	Je	22	08										
3821	777	642	20M	2708	23-11662	13-237	720	2	6	Ap	12	39	7	My	11	92	2	Je	10	45	3	Jl	9	98	5	Au	8							
3822	778	643	20M	5295	12-22506	9-394	721	4	3	Ap	1	76	5	My	1	29	6	My	30	82	1	Je	29	35	2	Jl	28							
3823	779	644	20M	7882	1-33350	5-552	722	5	1	Mr	22	12	4	My	20	18	5	Je	18	71	7	Jl	18	25	1	Au	16							
																					2	Ap	20	65										
3824	780	645	21M	0469	19-97251	3-686	723	6	7	Ap	10	02	1	My	9	55	3	Je	8	08	4	Jl	7	61	6	Au	60							
3825	781	646	20M	3055	9-08095	27-398	724	7	4	Mr	29	39	5	Ap	27	92	7	My	27	45	1	Je	25	98	3	Jl	25							
3826	782	647	20M	5642	27-71998	25-532	725	2	3	Ap	17	29	4	My	16	82	6	Je	15	35	7	Jl	14	88	2	Au	13							
3827	783	648	20M	8229	16-82841	21-690	726	3	7	Ap	6	65	2	My	6	18	3	Je	4	71	5	Jl	4	24	6	Au	2							
3828	784	649	21M	0816	5-93685	17-847	727	4	5	Mr	27	02	6	Ap	25	55	1	My	25	08	2	Je	23	61	5	Au	21							
3829	785	650	20M	3493	24-57588	15-981	728	5	3	Ap	13	92	5	My	13	45	6	Je	11	98	1	Jl	11	51	3	Au	10							
3830	786	651	20M	5220	13-68430	12-159	729	7	1	Ap	30	28	2	My	2	81	4	Je	1	35	5	Je	30	88	7	Jl	30							
3831	787	652	20M	8576	2-79274	8-296	730	1	5	Mr	23	65	7	Ap	22	18	3	Je	20	24	4	Jl	19	77	6	Au	18							
3832	788	653	21M	1163	21-43177	6-430	731	2	4	Ap	11	55	6	My	11	08	7	Je	9	61	2	Jl	9	14	3	Au	7							
3833	789	654	20M	3749	10-54020	2-588	732	3	1	Mr	30	92	3	Ap	29	45	4	My	28	98	6	Je	27	51	1	Jl	27							
3834	790	655	20M	6337	29-17923	0-722	733	5	7	Ap	18	81	2	My	18	34	3	Je	16	87	5	Jl	16	41	6	Au	14							
3835	791	656	20M	8924	18-28767	24-434	734	6	5	Ap	8	18	6	My	7	71	1	Je	6	24	2	Jl	5	77	4	Au	4							
3836	792	657	21M	1510	7-39609	20-592	735	7	2	Mr	28	55	4	Ap	27	08	5	My	26	61	7	Je	25	14	3	Au	23							
3837	793	658	20M	4097	26-03512	18-725	736	1	1	Ap	15	45	2	My	14	98	4	Je	13	51	6	Jl	13	04	7	Au	11							
3838	794	659	20M	6684	15-14356	14-883	737	3	5	Ap	4	81	7	My	40	34	1	Je	2	87	3	Jl	2	40	4	Jl	31							
3839	795	660	20M	9271	4-25229	11-042	738	4	3	Mr	25	18	4	Ap	23	71	6	My	23	24	2	Jl	21	30	3	Au	19							
3840	796	661	21M	1858	22-89101	9-175	739	5	2	Ap	13	08	3	My	12	61	5	Je	11	14	7	Jl	10	67	1	Au	9							
3841	797	662	20M	4444	11-99945	5-333	740	6	6	Ap	1	44	7	Ap	30	97	2	My	30	51	4	Je	29	04	5	Jl	28							
3842	798	663	20M	7031	1-10788	1-490	741	1	3	Mr	21	81	6	My	19	87	1	Je	18	41	2	Jl	17	93	4	Au	16							
3843	799	664	20M	9618	19-74691	27-179	742	2	2	Ap	9	71	4	My	9	24	5	Je	7	77	7	Jl	7	30	1	Au	50							

N.B.—For Surya Siddhanta figures for A.D. 500 to A.D. 999 see pages 76—79 below.

rya Siddhanta.

+ 147.65298	+ 177.18353	+ 206.71411	+ 236.24470	+ 265.77529	+ 295.30588	+ 324.83617 + 351.36705 + 21.736 + 23.712																
+ 9.880	+ 11.856	+ 13.832	+ 15.808	+ 17.784	+ 19.760																	
Asvina	Kartika		Margasira		Pausha		A.D.	Magha		A.D.	Phalguna		Chaitra									
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction				
S	3	.99	6 O	3	.52	1 N	2	.05	2 D	1	.58		4 D	31	.11	05	5 Jr	29	.64	7 F	28	.17
Au	24	.35	5 O	22	.42	6 N	20	.94	1 D	20	.47	06	3 Jr	19	.01		4 F	17	.54	6 Mr	19	.07
S	22	.88																				
S	12	.25	2 O	11	.78	4 N	10	.31	5 D	9	.84	07	7 Jr	8	.37		1 F	6	.90	3 Mr	8	.43
S	1	.62	7 O	1	.15	1 O	30	.68	3 N	29	.21		4 D	28	.74	08	6 Jr	27	.27	7 F	25	.80
S	19	.51	6 O	19	.05	7 N	17	.58	2 D	17	.11	09	3 Jr	15	.64		5 F	14	.17	6 Mr	15	.70
S	8	.88	3 O	8	.41	4 N	6	.94	6 D	6	.47	10	1 Jr	5	.00		2 F	3	.53	4 Mr	5	.07
Au	29	.25	7 S	27	.78	2 O	27	.31	3 N	25	.84		5 D	25	.37	11	6 Jr	23	.90	1 F	22	.43
S	17	.15	6 O	16	.68	1 N	15	.21	2 D	14	.74	12	4 Jr	13	.27		5 F	11	.80	7 Mr	12	.33
S	5	.52	4 O	5	.04	5 N	3	.57	7 D	3	.11	13	1 Jr	1	.64		3 Jr	31	.17	4 Mr	1	.70
Au	25	.88	1 S	24	.41	2 O	23	.94	4 N	22	.47		6 D	22	.00	14	7 Jr	20	.53	2 F	19	.06
S	13	.78	7 O	13	.31	1 N	11	.84	3 D	11	.37	15	4 Jr	9	.90		6 F	8	.43	7 Mr	9	.96
S	3	.15	4 O	2	.68	6 N	1	.21	7 N	30	.74		2 D	30	.27	16	3 Jr	28	.80	5 F	27	.33
S	21	.04	3 O	20	.57	5 N	19	.10	6 D	18	.63	17	1 Jr	17	.17		2 F	15	.70	4 Mr	17	.23
S	10	.41	7 O	9	.94	2 N	8	.47	4 D	8	.00	18	5 Jr	6	.53		7 F	5	.06	1 Mr	6	.59
Au	30	.78	5 S	29	.31	6 O	28	.84	1 N	27	.37		2 D	26	.90	19	4 Jr	25	.43	5 F	23	.96
S	18	.67	4 O	18	.21	5 N	16	.74	7 D	16	.27	20	1 Jr	14	.80		3 F	13	.33	4 Mr	13	.86
S	7	.04	1 O	6	.57	3 N	5	.10	4 D	4	.63	21	6 Jr	3	.16		7 F	1	.69	2 Mr	3	.23
Au	27	.41	5 S	25	.94	7 O	25	.47	2 N	24	.00		3 D	23	.53	22	5 Jr	22	.06	6 F	20	.59
S	15	.31	4 O	14	.84	6 N	13	.37	7 D	12	.90	23	2 Jr	11	.43		3 F	9	.96	5 Mr	11	.49
S	14	.67	2 O	4	.20	3 N	2	.73	5 D	2	.27		6 D	31	.80	24	1 Jr	30	.33	2 F	28	.86
S	22	.57	1 O	22	.10	2 N	20	.63	4 D	20	.16	25	5 Jr	18	.69		7 F	17	.22	1 Mr	18	.75
S	11	.94	5 O	11	.47	7 N	10	.00	1 D	9	.53	26	3 Jr	8	.06		4 F	6	.59	6 Mr	8	.12
S	1	.31	2 S	30	.84	4 O	30	.37	5 N	28	.90		7 D	28	.43	27	1 Jr	26	.96	3 F	25	.49
S	20	.20	1 O	19	.73	3 N	18	.26	4 D	17	.79	28	6 Jr	16	.33		7 F	14	.86	2 Mr	15	.39
S	8	.57	6 O	8	.10	7 N	6	.63	2 D	6	.16	29	3 Jr	4	.69		5 F	3	.22	6 Mr	4	.75
Au	28	.94	3 S	27	.47	5 O	27	.00	6 N	25	.53		1 D	25	.06	30	2 Jr	23	.59	4 F	22	.12
S	16	.83	2 O	16	.37	3 N	14	.90	5 D	14	.43	31	6 Jr	12	.96		1 F	11	.49	3 Mr	13	.02
S	6	.20	6 O	5	.73	1 N	4	.26	2 D	3	.79	32	4 Jr	2	.32		5 Jr	31	.85	7 Mr	1	.39
Au	25	.57	4 S	24	.10	5 O	23	.63	7 N	22	.16		1 D	21	.69	33	3 Jr	20	.22	4 F	18	.75
S	13	.47	3 O	13	.00	4 N	11	.53	6 D	11	.06	34	7 Jr	9	.59		2 F	8	.12	3 Mr	9	.65
S	2	.33	7 O	2	.36	1 O	31	.89	3 N	30	.43		4 D	29	.96	35	6 Jr	28	.49	1 F	27	.02
S	21	.73	6 O	21	.26	7 N	19	.79	2 D	19	.93	36	3 Jr	17	.85		5 F	16	.38	6 Mr	16	.91
S	10	.10	3 O	9	.63	5 N	8	.15	6 D	7	.69	37	1 Jr	6	.22		2 F	4	.75	4 Mr	6	.28
Au	30	.47	1 S	29	.00	2 O	28	.53	4 N	27	.06		5 D	26	.59	38	7 Jr	25	.12	1 F	23	.63
S	18	.36	6 O	17	.89	1 N	16	.42	2 D	15	.95	39	4 Jr	14	.49		6 F	13	.02	7 Mr	14	.55
S	7	.73	4 O	7	.26	5 N	5	.79	7 D	5	.32	40	1 Jr	3	.85		3 F	2	.38	4 Mr	2	.91
Au	27	.10	1 S	25	.63	3 O	25	.16	4 N	23	.69		6 D	23	.22	41	7 Jr	21	.75	2 F	20	.28
S	14	.99	7 O	14	.53	2 N	13	.06	3 D	12	.59	42	5 Jr	11	.12		6 F	9	.65	1 Mr	11	.18
S	4	.36	4 O	3	.89	6 N	2	.42	7 D	1	.95		2 D	31	.48	43	4 Jr	30	.01	5 F	28	.55

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom. col. 6					☉'s Anom. col. 7					☉'s Anom. col. 8					☉'s Anom. col. 9					☉'s Anom. col. 10				
									+ 29°53'059					+ 1°9'76					+ 3°9'52					+ 5°9'28					+ 7°9'04				
									Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapa								
									Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	
3844	800	665	21M	·2205	8·85525	23·337	743	3	7	Mr	30	·08	1	Ap	28	·61	3	My	28	·14	4	Je	26	·67	{	6	Jl	26					
																										7	Au	24					
3845	801	666	20M	·4792	27·49437	21·470	744	4	5	Ap	16	·97	7	My	16	·50	2	Je	15	·03	3	Jl	14	·57		5	Au	13					
3846	802	667	20M	·7378	16·60280	17·629	745	6	3	Ap	6	·84	3	My	5	·87	6	Je	4	·40	7	Jl	3	·93		2	Au	2					
3847	803	668	20M	·9995	5·71124	13·786	746	7	7	Mr	26	·71	2	Ap	25	·24	3	My	24	·77	{	5	Je	23	·30	1	Au	21					
																										6	Jl	22	·83				
3848	804	669	21M	·2552	24·35026	11·920	747	1	6	Ap	14	·61	1	My	14	·14	2	Je	12	·67	4	Jl	12	·20		5	Au	10					
3849	805	670	20M	·5132	13·45870	8·077	748	2	3	Ap	2	·97	5	My	2	·50	7	Je	1	·03	1	Je	30	·56		3	Jl	30					
3850	806	671	20M	·7726	2·56714	4·235	749	4	1	Mr	23	·21	{	2	Ap	21	·17	5	Je	19	·93	7	Jl	19	·46	1	Au	17					
																										4	My	21	·46				
3851	807	672	21M	·0312	21·20615	2·369	750	5	7	Ap	11	·24	1	My	10	·77	3	Je	9	·30	4	Jl	8	·83		6	Au	7					
3852	808	673	21M	·2899	10·31459	26·081	751	6	4	Mr	31	·60	6	Ap	30	·13	7	My	29	·67	2	Je	28	·20		3	Jl	27					
3853	809	674	20M	·5486	28·95362	24·215	752	7	3	Ap	18	·50	5	My	18	·03	6	Je	16	·56	1	Jl	16	·09		2	Au	14					
3854	810	675	20M	·8073	18·06205	20·373	753	2	7	Ap	7	·87	2	My	7	·40	3	Je	5	·93	5	Jl	5	·46		6	Au	3					
3855	811	676	21M	·0660	7·17049	16·530	754	3	5	Mr	28	·24	6	Ap	26	·77	1	My	26	·30	{	2	Je	24	·83	5	Au	22					
																										4	Jl	24	·36				
3856	812	677	21M	·3246	25·80951	14·664	755	4	4	Ap	16	·13	5	My	15	·66	7	Je	14	·19	1	Jl	13	·73		3	Au	12					
3857	813	678	20M	·5833	14·91795	10·822	756	5	1	Ap	4	·50	3	My	4	·03	4	Je	2	·56	6	Jl	2	·09		7	Jl	31					
3858	814	679	20M	·3420	4·02638	6·980	757	7	5	Mr	24	·87	7	Ap	23	·40	{	1	My	22	·93	4	Jl	20	·99	6	Au	19					
																										3	Je	21	·44				
3859	815	680	21M	·1007	22·66534	5·113	758	1	4	Ap	12	·77	6	My	12	·30	7	Je	10	·83	2	Jl	10	·36		3	Au	8					
3860	816	681	21M	·3594	11·77445	1·272	759	2	2	Ap	2	·13	3	My	1	·66	5	My	31	·19	6	Je	29	·72		1	Jl	29					
3861	817	682	20M	·6180	0·88228	24·983	760	3	{	6	Mr	21	·50	2	My	19	·56	4	Je	18	·09	5	Jl	17	·62	7	Au	16					
																										1	Ap	20	·03				
3862	818	683	20M	·8767	19·52131	23·117	761	5	5	Ap	9	·40	6	My	8	·93	1	Je	7	·46	2	Jl	6	·99		4	Au	5					
3863	819	684	21M	·1354	8·62974	19·275	762	6	2	Mr	29	·77	4	Ap	28	·30	5	My	27	·83	7	Je	26	·36	{	1	Jl	25					
																										3	Au	24					
3864	820	685	21M	·3941	27·26876	17·409	763	7	1	Ap	17	·67	3	My	17	·20	4	Je	15	·73	6	Jl	15	·26		7	Au	13					
3865	821	686	20M	·6528	16·37720	13·566	764	1	6	Ap	6	·03	7	My	5	·56	2	Je	4	·09	3	Jl	3	·62		5	Au	2					
3866	822	687	20M	·9114	5·48564	9·724	765	3	3	Mr	26	·40	4	Ap	24	·93	6	My	24	·46	{	7	Je	22	·99	4	Au	21					
																										2	Jl	22	·52				
3867	823	688	21M	·1701	24·12465	7·858	766	4	2	Ap	14	·30	3	My	13	·83	5	Je	12	·36	6	Jl	11	·89		1	Au	10					
3868	824	689	21M	·3288	13·23310	4·016	767	5	6	Ap	3	·66	1	My	3	·19	2	Je	1	·73	4	Jl	1	·26		5	Jl	30					
3869	825	690	20M	·6875	2·34153	0·173	768	6	4	Mr	23	·03	{	6	Ap	21	·56	1	Je	19	·62	3	Jl	19	·15	4	Au	17					
																										7	My	21	·09				
3870	826	691	20M	·9362	20·98055	25·862	769	1	2	Ap	10	·93	4	My	10	·46	5	Je	8	·99	7	Jl	8	·52		2	Au	7					
3871	827	692	21M	·2049	10·08899	22·019	770	2	7	Mr	31	·30	1	Ap	29	·83	3	My	29	·36	4	Je	27	·89		2	Jl	27					
3872	828	693	21M	·4635	28·72811	20·153	771	3	6	Ap	19	·19	7	My	18	·72	2	Je	17	·25	3	Jl	16	·79		5	Au	15					
3873	829	694	20M	·7222	17·83644	16·311	772	4	3	Ap	7	·56	5	My	7	·09	6	Je	5	·62	1	Jl	5	·15		2	Au	3					
3874	830	695	20M	·9809	6·94488	12·489	773	6	7	Mr	27	·93	2	Ap	26	·46	3	My	25	·99	{	5	Je	24	·52	1	Au	22					
																										7	Jl	24	·05				
3875	831	696	21M	·2396	25·58391	10·602	774	7	6	Ap	15	·83	1	My	15	·36	2	Je	13	·89	4	Jl	13	·42		5	Au	11					
3876	832	697	21M	·4983	14·69234	6·760	775	1	4	Ap	5	·19	5	My	4	·72	7	Je	3	·25	1	Jl	2	·78		3	Au	1					
3877	833	698	20M	·7569	3·80077	2·912	776	2	1	Mr	24	·56	3	Ap	23	·09	{	4	My	22	·62	7	Jl	20	·6								

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+ 147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·30588	{ +324·83647 +354·36705 + 21·736 + 23·712		
+ 9·880	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760			
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra
Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction		Week-day Month Day Fraction		Week-day Month Day Fraction	Week-day Month Day Fraction
2 S 23 ·26	3 O 22 ·79	5 N 21 ·32	6 D 20 ·85	44	1 Jr 19 ·38		2 F 17 ·91	4 Mr 18 ·44
3 S 11 ·63	1 O 11 ·16	2 N 9 ·69	4 D 9 ·22	45	5 Jr 7 ·75		7 F 6 ·28	1 Mr 7 ·81
3 Au 31 ·99	5 S 30 ·52	7 O 30 ·05	1 N 28 ·59		3 D 23 ·12	46	4 Jr 26 ·65	6 F 25 ·18
2 S 19 ·89	4 O 19 ·42	5 N 17 ·95	7 D 17 ·48	47	2 Jr 16 ·01		3 F 14 ·11	5 Mr 16 ·07
7 S 9 ·26	1 O 8 ·79	3 N 7 ·32	4 D 6 ·85	48	6 Jr 5 ·38		7 F 3 ·93	2 Mr 4 ·44
4 Au 28 ·63	6 S 27 ·16	7 O 26 ·69	2 N 25 ·22		3 D 21 ·75	49	5 Jr 23 ·28	6 F 21 ·81
3 S 16 ·52	5 O 16 ·05	6 N 14 ·58	1 D 14 ·11	50	2 Jr 12 ·62		4 F 11 ·18	5 Mr 12 ·71
7 S 5 ·89	2 O 5 ·42	3 N 3 ·96	5 D 3 ·48	51	7 Jr 2 ·01		1 Jr 31 ·54	3 Mr 2 ·07
5 Au 26 ·26	6 S 24 ·79	Margasira Kshaya		2 N 22 ·85	4 D 22 ·38	52	5 Jr 20 ·91	7 F 19 ·44
	1 O 24 ·32							1 Mr 19 ·97
4 S 13 ·15	5 O 12 ·69	7 N 11 ·22	1 D 10 ·75	53	3 Jr 9 ·28		4 F 7 ·81	6 Mr 9 ·34
1 S 2 ·52	3 O 2 ·05	4 O 31 ·58	6 N 30 ·11		7 D 29 ·64	54	2 Jr 28 ·17	3 F 26 ·71
7 S 21 ·42	1 O 20 ·95	3 N 19 ·48	5 D 19 ·01	55	6 Jr 17 ·54		1 F 16 ·07	2 Mr 17 ·60
4 S 10 ·79	6 O 10 ·32	7 N 8 ·85	2 D 8 ·38	56	3 Jr 6 ·91		5 F 5 ·44	6 Mr 5 ·57
2 Au 30 ·15	3 S 28 ·68	5 O 28 ·21	6 N 26 ·75		1 D 26 ·28	57	2 Jr 24 ·81	4 F 23 ·34
1 S 18 ·05	2 O 17 ·58	4 N 16 ·11	5 D 15 ·64	58	7 Jr 14 ·17		1 F 12 ·70	3 Mr 14 ·73
5 S 7 ·42	6 O 6 ·95	1 N 5 ·48	3 D 5 ·01	59	4 Jr 3 ·54		6 F 2 ·07	7 Mr 3 ·60
2 Au 27 ·79	4 S 26 ·32	5 O 25 ·85	7 N 24 ·38		1 D 23 ·91	60	3 Jr 22 ·44	4 F 20 ·97
1 S 14 ·68	3 O 14 ·21	4 N 12 ·74	6 D 12 ·27	61	7 Jr 10 ·81		2 F 9 ·34	3 Mr 10 ·87
3 S 4 ·05	7 O 3 ·58	2 N 2 ·11	3 D 1 ·64		5 D 31 ·18	62	6 Jr 29 ·71	1 F 28 ·24
4 S 22 ·95	6 O 22 ·48	1 N 21 ·01	2 D 20 ·54	63	4 Jr 19 ·07		5 F 17 ·60	7 Mr 19 ·13
2 S 12 ·32	3 O 11 ·85	5 N 10 ·38	6 D 9 ·91	64	1 Jr 8 ·44		2 F 6 ·97	4 Mr 7 ·50
6 Au 31 ·69	1 S 30 ·22	2 O 29 ·75	4 N 28 ·28		5 D 27 ·81	65	7 Jr 26 ·34	1 F 24 ·87
5 S 19 ·58	7 O 19 ·11	1 N 17 ·64	3 D 17 ·17	66	4 Jr 15 ·71		6 F 14 ·24	7 Mr 15 ·77
2 S 8 ·95	4 O 8 ·48	6 N 7 ·01	7 D 6 ·54	67	2 Jr 5 ·07		3 F 3 ·60	5 Mr 5 ·13
7 Au 29 ·32	1 S 27 ·85	3 O 27 ·38	4 N 25 ·91		6 D 25 ·44	68	7 Jr 23 ·97	2 F 22 ·50
6 S 16 ·25	7 O 15 ·75	2 N 14 ·28	3 D 13 ·81	69	5 Jr 12 ·34		6 F 10 ·87	1 Mr 12 ·40
3 S 5 ·58	5 O 5 ·11	6 N 3 ·64	1 D 3 ·17	70	2 Jr 1 ·70		4 Jr 31 ·23	5 Mr 1 ·77
7 Au 25 ·95	4 O 24 ·01	5 N 22 ·54	Pausha. Kshaya		7 D 22 ·07	71	1 Jr 20 ·60	3 F 19 ·13
2 S 24 ·48				72	5 Jr 9 ·97		7 F 8 ·50	4 Mr 20 ·66
6 S 13 ·85	1 O 13 ·38	2 N 11 ·91	4 D 11 ·44		3 D 29 ·34	73	4 Jr 27 ·87	2 Mr 9 ·03
4 S 2 ·21	5 O 1 ·74	6 O 31 ·27	1 N 29 ·81	74	2 Jr 17 ·23		3 F 15 ·76	6 F 26 ·40
3 S 21 ·11	5 O 20 ·64	9 N 19 ·17	7 D 18 ·70					5 Mr 17 ·29
7 S 10 ·48	2 O 10 ·01	3 N 8 ·54	5 D 8 ·07	75	6 Jr 6 ·60		1 F 5 ·13	2 Mr 6 ·66
4 Au 30 ·85	6 S 29 ·38	7 O 28 ·91	2 N 27 ·44		3 D 26 ·97	76	5 Jr 25 ·50	7 F 24 ·03
3 S 17 ·74	5 O 17 ·27	6 N 15 ·80	1 D 15 ·33	77	2 Jr 13 ·87		4 F 12 ·40	5 Mr 13 ·93
1 S 7 ·11	2 O 6 ·64	4 N 5 ·17	5 D 4 ·70	78	7 Jr 3 ·23		1 F 1 ·76	3 Mr 3 ·29
5 Au 27 ·48	7 S 26 ·01	1 O 25 ·54	3 N 24 ·07		4 D 23 ·60	79	6 Jr 22 ·13	7 F 20 ·66
4 S 15 ·37	5 O 14 ·91	7 N 13 ·44	1 D 12 ·97	80	3 Jr 11 ·50		5 F 10 ·03	6 Mr 10 ·56
1 S 3 ·74	3 O 3 ·27	4 N 1 ·80	6 D 1 ·33		7 D 30 ·86	81	2 Jr 29 ·39	3 F 27 ·92
7 S 22 ·64	2 O 22 ·17	3 N 20 ·70	5 D 20 ·23	82	6 Jr 18 ·76		1 F 17 ·29	2 Mr 18 ·82
5 S 12 ·01	6 O 11 ·54	1 N 10 ·07	2 D 9 ·60	83	4 Jr 8 ·13		5 F 6 ·66	7 Mr 8 ·19

TABLE X-

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom col. 6				☾'s Anom col. 7				☉'s Anom col. 6				☾'s Anom col. 7				☉'s Anom col. 6				☾'s Anom col. 7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
								Vaisakha	Jyeshtha	Ashada	Shravana	Bhadrapada																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

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+ 147.65293	+ 177.18353	+ 206.71411	+ 236.24470	+ 265.77529	+ 295.30588	<div>+ 324.83647 + 354.36705 + 21.736 + 23.712</div>																				
+ 9.880	+ 11.856	+ 13.832	+ 15.808	+ 17.784	+ 19.760																					
Asvina	Kartika				Margasira				Pausha				A.D.	Magha				A.D.	Phalguna				Chaitra			
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
S	1	.37	3 S	30	.90	5 O	30	.43	6 N	28●	.97					1 D	28	.50	84	3 Jr	27	.03	4 F	25	.56	
S	19	.27	2 O	18○	.80	4 N	17	.33	5 D	16	.86	85	7 Jr	15	.39		1 F	13	.92		3 Mr	15	.45			
S	8	.64	7 O	8○	.17	1 N	6	.70	3 D	6	.23	86	4 Jr	4	.76		6 F	3	.29		7 Mr	4	.82			
Au	29	.01	4 S	27●	.54	6 O	27	.07	7 N	25	.60		2 D	25	.13	87	3 Jr	23	.66		5 F	22○	.19			
S	16●	.90	3 O	16	.43	4 N	14	.96	6 D	14	.49	88	1 Jr	13	.03		2 F	11○	.56		4 Mr	12	.09			
S	5	.27	7 O	4	.80	2 N	3	.33	3 D	2	.86	89	5 Jr	1	.39		6 Jr	30●○	.92		1 Mr	1	.45			
Au	25	.64	6 O	23	.70	1 N	22	.23	2 D	21	.76	90	4 Jr	20●	.29		5 F	18	.82		7 Mr	20	.35			
S	24	.17																								
S	13	.53	4 O	13	.07	5 N	11	.60	7 D	11○	.13	91	1 Jr	9●	.66		3 F	8	.19		4 Mr	9	.72			
S	2	.90	1 O	2	.43	2 O	31	.96	4 N	30○	.49		6 D	30	.02	92	7 Jr	28	.55		2 F	27	.09			
S	20	.80	7 O	20	.33	1 N	18●○	.86	3 D	18	.39	93	4 Jr	16	.92		6 F	15	.45		7 Mr	16	.98			
S	10	.17	4 O	9	.70	6 N	8	.23	7 D	7	.76	94	2 Jr	6	.29		3 F	4	.82		5 Mr	6	.35			
Au	30	.53	2 S	29○	.06	3 O	28	.59	5 N	27	.13	96	6 D	26	.66	95	1 Jr	25	.19		2 F	23	.72			
S	18○	.43	7 O	17	.96	2 N	16	.50	4 D	16	.02		5 Jr	14	.55		7 F	13	.08		1 Mr	13○	.6			
S	6●○	.80	5 O	6	.33	6 N	4	.86	1 D	4	.39	97	2 Jr	2	.92		4 F	1	.45		5 Mr	2	.98			
Au	27	.17	2 S	25	.70	4 O	25	.23	5 N	23	.76		7 D	23	.29	98	1 Jr	21○	.82		3 F	20	.35			
S	15	.06	1 O	14	.59	3 N	13	.12	4 D	12	.65	99	6 Jr	11○	.19		7 F	9	.72		2 Mr	11	.25			
S	4	.43	5 O	3	.96	7 N	2	.49	2 D	2	.02		3 D	31○	.55	800	5 Jr	30	.08		6 F	28	.61			
S	22	.32	4 O	21	.86	6 N	20	.39	7 D	19	.92	01	2 Jr	18	.45		3 F	16	.98		5 Mr	18	.51			
S	11	.70	2 O	11	.23	3 N	9	.76	5 D	9	.29	02	6 Jr	7	.82		1 F	6	.35		2 Mr	7	.88			
S	1	.06	6 S	30	.59	1 O	30○	.13	2 N	28●	.66	04	4 D	28	.19	03	5 Jr	26	.72		7 F	25	.25			
S	19	.96	5 O	19○	.49	7 N	18	.02	1 D	17	.55		3 Jr	16	.09		4 F	14	.61		6 Mr	15	.15			
S	8	.33	2 O	7	.86	4 N	6	.39	5 D	5	.92	05	7 Jr	4	.45		1 F	2	.98		3 Mr	4	.51			
Au	28○	.70	7 S	27	.23	1 O	26	.76	3 N	25	.29	07	4 D	24	.82	06	6 Jr	23	.35		1 F	21○	.96			
S	16●	.59	6 O	16	.12	7 N	14	.65	2 D	14	.19		3 Jr	12	.72		5 F	11●○	.25		6 Mr	12	.78			
S	5	.96	3 O	5	.49	5 N	4	.02	6 D	3	.55	08	1 Jr	2	.08		2 Jr	31●	.61		4 Mr	1	.14			
Au	25	.32	2 O	23	.39	3 N	21	.92	5 D	21○	.45	09	6 Jr	19	.98		1 F	18	.51		3 Mr	20	.04			
S	23	.86																								
S	13	.23	6 O	12	.76	1 N	11	.29	2 D	10○	.82	10	4 Jr	9	.35		5 F	7	.88		7 Mr	9	.41			
S	2	.59	4 O	2	.12	5 O	31	.65	7 N	30●○	.18		1 D	29	.71	11	3 Jr	28	.25		4 F	26	.78			
S	21	.49	3 O	21	.02	4 N	19	.55	6 D	19	.08	12	7 Jr	17	.61		2 F	16	.14		3 Mr	16	.67			
S	9	.86	7 O	9○	.39	1 N	7●	.92	3 D	7	.45	13	4 Jr	5	.98		6 F	4	.51		1 Mr	6	.04			
Au	30	.22	4 S	28○	.75	6 O	28	.29	7 N	26	.82	15	2 D	26	.35	14	3 Jr	24	.88		5 F	23	.41			
S	18○	.12	3 O	17	.65	5 N	16	.18	6 D	15	.71		1 Jr	14	.24		2 F	12	.77		4 Mr	14	.31			
S	7●	.49	1 O	7	.02	2 N	5	.55	4 D	5	.08	16	5 Jr	3	.61		7 F	2○	.14		1 Mr	2●	.67			
Au	26	.86	5 S	25	.39	6 O	24	.92	1 N	23	.45	18	2 D	22	.98	17	4 Jr	21○	.51		6 F	20●	.04			
S	14	.75	4 O	14	.28	5 N	12	.81	7 D	12	.35		1 Jr	10○	.88		3 F	9	.41		4 Mr	10	.94			
S	4	.12	1 O	3	.65	3 N	2	.18	4 D	1	.71		6 D	31●	.24	19	7 Jr	29	.77		2 F	28	.30			
S	23	.02	7 O	22	.55	2 N	21	.08	3 D	20	.61	20	5 Jr	19	.14		6 F	17	.67		1 Mr	18	.20			
S	11	.39	4 O	10	.92	6 N	9○	.45	7 D	8●	.98	21	2 Jr	7	.51		4 F	6	.04		5 Mr	7	.57			
Au	31	.75	2 S	30	.28	3 O	29○	.81	5 N	28	.34		6 D	27	.87	22	1 Jr	26	.41		2 F	24	.94			

TABLE X—

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	☉'s Anom col. 6					☉'s Anom col. 7					☉'s Anom col. 6					☉'s Anom col. 7					☉'s Anom col. 6					☉'s Anom col. 7																																																																																																																																																																																																																									
							Week-day of 1st January.					☉'s Anom col. 6					☉'s Anom col. 7					☉'s Anom col. 6					☉'s Anom col. 7					☉'s Anom col. 6					☉'s Anom col. 7																																																																																																																																																																																																																				
							Vaisakha					Jyeshtha					Ashada					Sravana					Bhadrapada					Bhadrapada					Bhadrapada																																																																																																																																																																																																																				
Month and day A.D.	Fraction of day.	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day

N.B.—For Surya Siddhanta figures for A.D. 500 to A.D. 999 see pages 76—79 below.

Arya Siddhanta.

+ 147·65293				+ 177·18353				+ 206·71411				+ 236·24470				+ 265·77529				+ 295·30588				{ + 324·83647 + 354·36705 + 21·736 + 23·712					
+ 9·880				+ 11·856				+ 13·832				+ 15·808				+ 17·784				+ 19·760									
Asvina				Kartika				Margasira				Pausha				A.D.	Magha				A.D.	Phalguna				Chaitra			
Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
6 S	19	·65		1 O	19○	·18		2 N	17	·71		4 D	17	·24		23	5 Jr	15	·27			7 F	14	·30		1 Mr	15	·83	
4 S	9○	·02		5 O	8●	·55		7 N	7	·08		1 D	6	·61		24	3 Jr	5	·14			4 F	3	·67		6 Mr	4○	·20	
1 Au	28○	·38		2 S	26●	·91		4 O	26	·45		5 N	24	·98			7 D	24	·51	25		2 Jr	23	·04		3 F	21○	·57	
7 S	16	·28		1 O	15	·81		3 N	14	·34		4 D	13	·87		26	6 Jr	12	·40			7 F	10	·93		2 Mr	12	·47	
4 S	5	·65		6 O	5	·18		7 N	3	·71		2 D	3	·24		27	3 Jr	1○	·77			5 Jr	31	·30		6 Mr	1	·83	
2 Au	26	·02		5 O	24	·08		6 N	22	·61		1 D	22○	·14		28	2 Jr	20	·67			4 F	19	·20		5 Mr	19	·73	
3 S	24	·55																											
1 S	12	·91		2 O	12	·44		4 N	10	·97		5 D	10○	·51		29	7 Jr	9	·04			1 F	7	·57		3 Mr	9	·10	
5 S	2	·28		6 O	1	·81		1 O	31	·34		2 N	29●	·87			4 D	29	·40	30		5 Jr	27	·93		7 F	26	·46	
4 S	21	·18		5 O	20○	·71		7 N	19	·24		1 D	18	·77		31	3 Jr	17	·30			5 F	15	·83		6 Mr	17	·36	
1 S	10	·55		3 O	10○	·08		4 N	8	·61		6 D	8	·14		32	7 Jr	6	·67			2 F	5	·20		3 Mr	5	·73	
5 Au	29	·91		7 S	28○	·44		1 O	27	·97		3 N	26	·50			5 D	26	·03	33		6 Jr	24	·57		1 F	23	·10	
4 S	17●	·81		6 O	17	·34		7 N	15	·87		2 D	15	·40		34	3 Jr	13	·93			5 F	12○	·46		6 Mr	13●	·99	
2 S	7●	·18		3 O	6	·71		5 N	5	·24		6 D	4	·77		35	1 Jr	3	·30			2 F	1○	·83		4 Mr	3●	·72	
6 Au	27	·54		1 S	26	·07		2 O	25	·61		4 N	24	·14			5 D	23	·67	36		7 Jr	22○	·20	{	1 F	20	·73	
5 S	14	·44		6 O	13	·97		1 N	12	·50		3 D	12	·03		37	4 Jr	10	·56			6 F	9	·09		3 Mr	21	·26	
2 S	3	·83		4 O	3	·34		5 N	1	·87		7 D	1	·40			1 D	30●	·93	38		3 Jr	29	·46		4 F	27	·99	
1 S	22	·71		3 O	22	·24		4 N	20○	·77		6 D	20	·30		39	7 Jr	18	·83			2 F	17	·36		3 Mr	18	·89	
6 S	12	·07		7 O	11	·60		2 N	10○	·13		3 D	9	·67		40	5 Jr	8	·20			6 F	6	·73		1 Mr	7	·26	
3 Au	31	·44		4 S	29	·97		6 O	29●○	·50		1 N	28	·03			2 D	27	·56	41		4 Jr	26	·09		5 F	24	·62	
2 S	19	·34		3 O	18●	·87		5 N	17	·40		6 D	16	·93		42	1 Jr	15	·46			2 F	13	·99		4 Mr	15○	·52	
6 S	8○	·71		1 O	8	·24		2 N	6	·77		4 D	6	·30		43	5 Jr	4	·83			7 F	3	·36		1 Mr	4○	·89	
4 Au	29●○	·07		5 S	27	·60		7 O	27	·13		1 N	25	·66			3 D	25	·19	44		4 Jr	23	·73		6 F	22●	·26	
2 S	15	·97		4 O	15	·50		6 N	14	·03		7 D	13	·56		45	2 Jr	12○	·09			3 F	10●	·62		5 Mr	12	·15	
7 S	5	·34		1 O	4	·87		3 N	3	·40		4 D	2	·93		46	6 Jr	1○	·46			7 Jr	30	·99		2 Mr	1	·52	
4 Au	25	·70		7 O	23	·77		2 N	22	·30		3 D	21●○	·83		47	5 Jr	20	·36			6 F	18	·89		1 Mr	20	·42	
6 S	24	·23																											
3 S	13	·60		5 O	13	·13		6 N	11	·66		1 D	11	·19		48	2 Jr	9	·72			4 F	8	·25		5 Mr	8	·79	
7 S	1	·97		2 O	1	·50		4 O	31○	·03		5 N	29	·56			7 D	29	·09	49		1 Jr	27	·62		3 F	26	·15	
6 S	20	·87		1 O	20○	·40		2 N	18	·93		4 D	18	·46		50	5 Jr	16	·99			7 F	15	·52		2 Mr	17	·05	
4 S	10	·23		5 O	9●○	·76		7 N	8	·29		1 D	7	·83		51	3 Jr	6	·36			4 F	4	·89		6 Mr	6	·42	
1 Au	30	·60		3 S	29	·13		4 O	28	·66		6 N	27	·19			7 D	26	·72	52		2 Jr	25	·25		3 F	23○	·78	
7 S	17	·50		2 O	17	·03		3 N	15	·56		5 D	15	·09		53	6 Jr	13	·62			1 F	12○	·15		2 Mr	13	·68	
4 S	6●	·87		6 O	6	·40		7 N	4	·93		2 D	4	·46		54	3 Jr	2	·99			5 F	1●○	·52		7 Mr	3	·05	
2 Au	27	·23		3 S	25	·76		5 O	25	·29		6 N	23	·82			1 D	23	·35	55		2 Jr	21	·89	{	4 F	20	·42	
1 S	15	·13		2 O	14	·66		4 N	13	·19		5 D	12	·72		56	7 Jr	11	·25			1 F	9	·78		5 Mr	21	·95	
5 S	3	·50		7 O	3	·03		1 N	1	·56		3 D	1○	·09			4 D	30●	·62	57		6 Jr	29	·18		3 Mr	10	·31	
4 S	22	·39		5 O	21	·93		7 N	20○	·46		1 D	19	·99		58	3 Jr	18	·52			5 F	17	·05		6 Mr	18	·58	
1 S	11	·76		3 O	11	·29		4 N	9○	·82		6 D	9	·35		59	7 Jr	7	·88			2 F	6	·41		3 Mr	7	·95	
6 S	1	·13		7 S	30	·66		2 O	30	·19		3 N	28	·72			5 D	28	·25	60		6 Jr	26	·78		1 F	25	·31	
5 S	19○	·03		6 O	18●	·56		1 N	17	·09		2 D	16	·62		61	4 Jr	15	·15			5 F	13	·68		7 Mr	15●○	·21	

TABLE X—

Kaliyuga.	Vikrama Era.	Saka Era.	Month and day A.D.	Com- mence- ment of Solar Year. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom col. 6					☾'s Anom col. 7					Vaisakha					Jyeshtha					Ashada					Sravana					Bhadrapada																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
									+ 29·53059					+ 1·976					+ 59·06117					+ 88·59176					+ 118·12235					+ 5·928					+ 7·904																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
									Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
3962	918	783	21M	·7448	22·99662	15·104	861	4	1	Ap	13	·74	3	My	13	·27	4	Je	11	80	6	Jl	11	·33	7	Au	9	·80	3963	919	784	22M	·0035	12·10505	11·262	862	5	6	Ap	3	·11	7	My	2	·64	2	Je	1	17	3	Je	30	·70	5	Jl	30	·23	3964	920	785	22M	·2621	1·21348	7·419	863	6	3	Mr	23	·47	6	My	21	·54	1	Je	20	85	2	Jl	19○	·60	4	Au	18●	·13	3965	921	786	21M	·5208	19·85251	5·553	864	7	2	Ap	10	·37	3	My	9	·90	5	Je	8	·43	6	Jl	7○	·96	1	Au	6●	·49	3966	922	787	21M	·7795	8·96095	1·711	865	2	6	Mr	30	·74	1	Ap	29	·27	2	My	28	·80	4	Je	27○	·33	5	Jl	26	·86	3967	923	788	22M	·0382	27·59996	27·399	866	3	5	Ap	18	·64	7	My	18	·17	1	Je	16●	·70	3	Jl	16	·23	4	Au	14	·76	3968	924	789	22M	·2969	16·70841	23·557	867	4	3	Ap	8	·00	4	My	7○	·53	6	Je	6●	·07	7	Jl	5	·60	2	Au	4	·13	3969	925	790	21M	·5556	5·81684	19·715	868	5	7	Mr	27	·37	1	Ap	25○	·90	3	My	25	·43	4	Je	23	·96	1	Au	22	·02	3970	926	791	21M	·8142	24·45586	17·848	869	7	6	Ap	15○	·27	7	My	14	·80	2	Je	13	·33	3	Jl	12	·86	5	Au	11	·39	3971	927	792	22M	·0729	13·56430	14·006	870	1	3	Ap	4	·64	5	My	4	·17	6	Je	2	·70	1	Jl	2	·23	2	Jl	31	·76	3972	928	793	22M	·3316	2·67283	10·164	871	2	1	Mr	25	·00	2	Ap	23	·53	5	Je	21	·59	7	Jl	21	·12	1	Au	19○	·66	3973	929	794	21M	·5903	21·31175	8·298	872	3	6	Ap	11	·90	1	My	11	·43	2	Je	9	·96	4	Jl	9	·49	6	Au	8○	·09	3974	930	795	21M	·8490	10·42019	4·455	873	5	4	Ap	1	·27	5	Ap	30	·80	7	My	30	·33	1	Je	28	·86	3	Jl	28●	·32	3975	931	796	22M	·1076	29·05922	2·589	874	6	3	Ap	20	·16	4	My	19	·70	6	Je	18○	·23	7	Jl	17●	·76	2	Au	16	·29	3976	932	797	22M	·3663	18·16765	26·301	875	7	7	Ap	9	·53	2	My	9	·06	3	Je	7○	·59	5	Jl	7	·12	6	Au	5	·65	3977	933	798	21M	·6250	7·27608	22·459	876	1	4	Mr	28	·90	6	Ap	27	·43	7	My	26●○	·96	2	Je	25	·49	5	Au	23	·55	3978	934	799	21M	·8837	25·91511	20·593	877	3	3	Ap	16	·80	5	My	16	·32	6	Je	14	·86	1	Jl	14	·39	2	Au	12	·92	3979	935	800	22M	·1424	15·02354	16·751	878	4	1	Ap	6○	·16	2	My	5●	·69	4	Je	4	·22	5	Jl	3	·76	7	Au	2	·29	3980	936	801	22M	·4009	4·13198	12·908	879	5	5	Mr	26○	·53	7	Ap	25	·06	1	My	24	·59	4	Jl	22	·65	6	Au	21	·18	3981	937	802	21M	·6597	22·77101	11·042	880	6	4	Ap	13	·43	5	My	12	·96	7	Je	11	·49	2	Jl	11	·02	3	Au	9	·55	3982	938	803	21M	·9184	11·87944	7·200	881	1	1	Ap	2	·80	3	My	2	·33	4	My	31	·86	6	Je	30	·39	7	Jl	29○	·92	3983	939	804	22M	·1771	0·98787	3·358	882	2	6	Mr	23	·16	2	My	21	·22	3	Je	19	·75	5	Jl	19○	·28	6	Au	17	·82	3984	940	805	22M	·4358	19·62690	1·491	883	3	5	Ap	11	·06	6	My	10	·59	1	Je	9	·12	2	Jl	8●○	·65	4	Au	7	·18	3985	941	806	21M	·6944	8·73533	25·204	884	4	2	Mr	30	·43	3	Ap	28	·96	5	My	28	·49	7	Je	27	·05	1	Jl	26	·55	3986	942	807	21M	·9531	27·37436	23·337	885	6	1	Ap	18	·32	2	My	17○	·86	4	Je	16●	·39	5	Jl	15	·92	7	Au	14	·45	3987	943	808	22M	·2118	16·48280	19·495	886	7	5	Ap	7	·69	7	My	7○	·22	1	Je	5	·75	3	Jl	5	·28	4	Au	3	·81	3988	944	809	22M	·4705	5·59122	15·653	887	1	3	Mr	28	·06	4	Ap	26○	·59	6	My	26	·12	7	Je	24	·65	3	Au	22	·71	3989	945	810	21M	·7292	24·23025	13·787	888	2	1	Ap	14●	·96	3	My	14	·49	5	Je	13	·02	6	Jl	12	·55	1	Au	11	·08	3990	946	811	21M	·9878	13·33869	9·944	889	4	6	Ap	4●	·32	7	My	3	·85	2	Je	2	·38	3	Jl	1	·92	5	Jl	31	·45	3991	947	812	22M	·2465	2·44712	6·102	890	5	3	Mr	24	·69	5	Ap	23	·22	1	Je	21	·28	2	Jl	20	·81	4	Au	19○	·34	3992	948	813	22M	·5052	21·08615	4·236	891	6	2	Ap	12	·59	4	My	12	·12	5	Je	10	·65	7	Jl	10	·18	1	Au	8●○	·71	3993	949	814	21M	·7639	10·19459	0·394	892	7	6	Mr	31	·96	1	Ap	30	·49	3	My	30	·02	4	Je	28○	·55	6	Jl	28	·08	3994	950	815	22M	·0226	28·83360	26·082	893	2	5	Ap	19	·85	7	My	19	·38	1	Je	17○	·91	3	Jl	17	·44	4	Au	15	·98	3995	951	816	22M	·2812	17·94204	22·240	894	3	3	Ap	9	·22	4	My	8	·75	6	Je	7●○	·28	7	Jl	6	·81	2	Au	5	·34	3996	952	817	22M	·5399	7·04979	18·397	895	4	7	Mr	29	·59	2	Ap	28	·12	3	My	27●	·65	5	Je	26	·18	1	Au	24	·24	3997	953	818	21M	·7986	25·68950	16·531	896	5	6	Ap	16○	·48	1	My	16	·02	2	Je	14	·55	4	Jl	14	·08	5	Au	12	·61	3998	954	819	22M	·0573	14·79794	12·689	897	8	3	Ap	5●○	·85	5	My	5	·38	6	Je	3	·91	1	Jl	3	·44	2	Au	1	·97	3999	955	820	22M	·3160	3·90637	8·846	898	1	1	Mr	26●○	·22	2	Ap	24	·75	4	My	24	·28	7	Jl	22	·34	1	Au	20	·87	4000	956	821	22M	·5746	22·54539	6·980	899	2	7	Ap	14	·12	1	My	13	·65	3	Je	12	·18	4	Jl	11	·71	6	Au	10○	·24

N B.—For Surya Siddhanta figures for A.D. 500 to A.D. 999 see pages 76—79 below.

Arya Siddhanta.

+ 147·65293	+ 177·18353	+ 206·71411	+ 236·24470		+ 265·77529	+ 295·30588	{ +324·83647 +354·36705 + 21·736 + 23·712		
+ 9·880	+ 11·856	+ 13·832	+ 15·808		+ 17·784	+ 19·760			
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra	
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction		Week-day Month Day Fraction		Week-day Month Day Fraction	Week-day Month Day Fraction	
2 S 8 [○] ·39	3 O 7 ·92	5 N 6 ·45	7 D 6 ·09	62	1 Jr 4 ·52		3 F 3 ·05	4 Mr 4 [●] ·58	
6 Au 28 [●] ·76	1 S 27 ·29	2 O 26 ·82	4 N 25 ·35	63	5 D 24 ·88	63	7 Jr 23 [○] ·41	1 F 21 ·94	
5 S 16 ·66	7 O 16 ·19	1 N 14 ·72	3 D 14 ·25	64	4 Jr 12 [○] ·78		6 F 11 ·31	7 Mr 11 ·84	
3 S 5 ·03	4 O 4 ·56	6 N 3 ·09	7 D 2 ·62	65	2 Jr 1 [○] ·15		3 Jr 30 ·68	5 Mr 1 ·21	
1 S 23 ·92	3 O 23 ·45	4 N 21 ·98	6 D 21 ·51	66	1 Jr 20 ·05		2 F 18 ·58	4 Mr 20 ·11	
6 S 13 ·29	7 O 12 ·82	2 N 11 [○] ·35	3 D 10 [●] ·88	67	5 Jr 9 ·41		6 F 7 ·94	1 Mr 9 ·47	
3 S 2 ·66	5 O 2 ·19	6 O 31 [○] ·72	1 N 30 ·25	68	2 D 29 ·78	68	4 Jr 28 ·31	5 F 26 ·84	
2 S 20 ·55	4 O 20 [○] ·09	5 N 18 ·62	7 D 18 ·15	69	1 Jr 16 ·68		3 F 15 ·21	4 Mr 16 ·74	
6 S 9 ·92	1 O 9 [●] ·45	2 N 7 ·98	4 D 7 ·51	70	6 Jr 6 ·04		7 F 4 ·57	2 Mr 6 [○] ·11	
4 Au 30 ·29	5 S 28 ·82	7 O 28 ·35	1 N 26 ·88	71	3 D 26 ·41	71	4 Jr 24 ·94	6 F 23 [○] ·47	
3 S 18 ·19	4 O 17 ·72	6 N 16 ·25	7 D 15 ·78	72	2 Jr 14 ·31		3 F 12 [○] ·84	5 Mr 13 ·37	
7 S 6 ·55	2 O 6 ·08	3 N 4 ·61	5 D 4 ·14	73	6 Jr 2 ·68		1 F 1 [●] ·21	2 Mr 2 ·74	
4 Au 26 ·92	6 S 25 ·45	7 O 24 ·98	2 N 23 ·51	74	4 D 23 ·04	74	5 Jr 21 ·57	7 F 20 ·10	
								1 Mr 21 ·63	
3 S 14 ·82	5 O 14 ·35	6 N 12 ·89	1 D 12 [○] ·41	75	2 Jr 10 ·94		4 F 9 ·47	6 Mr 11 ·06	
1 S 4 ·19	2 O 3 ·72	4 N 2 ·25	5 D 1 [○] ·78	76	7 D 31 ·31	76	1 Jr 29 ·84	3 F 28 ·37	
7 S 22 ·08	1 O 21 ·61	3 N 20 [○] ·14	4 D 19 ·67	77	6 Jr 18 ·20		7 F 16 ·74	2 Mr 18 ·27	
4 S 11 ·45	5 O 10 ·98	7 N 9 [●] ·51	2 D 9 ·04	78	3 Jr 7 ·57		5 F 6 ·10	6 Mr 7 ·63	
1 Au 31 ·82	3 S 30 [○] ·35	4 O 29 ·88	6 N 28 ·41	79	7 D 27 ·94	79	2 Jr 26 ·47	4 F 25 ·06	
7 S 19 [○] ·71	2 O 19 ·24	3 N 17 ·78	5 D 17 ·31	80	6 Jr 15 ·84		1 F 14 ·37	2 Mr 14 [○] ·90	
5 S 8 [○] ·08	6 O 7 ·61	1 N 6 ·14	2 D 5 ·67	81	4 Jr 4 ·20		5 F 2 [○] ·73	7 Mr 4 ·26	
2 Au 28 ·45	3 S 26 ·98	5 O 26 ·51	7 N 25 ·04	82	1 D 24 ·57	82	3 Jr 23 [○] ·10	4 F 21 ·63	
1 S 16 ·35	2 O 15 ·88	4 N 14 ·41	5 D 13 ·94	83	7 Jr 12 [○] ·47		2 F 11 ·00	3 Mr 12 ·53	
5 S 5 ·71	7 O 5 ·24	1 N 3 ·77	3 D 3 ·30	84	4 Jr 1 [●] ·84		6 Jr 31 ·37	7 F 29 ·90	
4 S 23 ·61	6 O 23 ·14	7 N 21 [○] ·67	2 D 21 [●] ·20	85	3 Jr 19 ·73		5 F 18 ·26	6 Mr 19 ·79	
1 S 12 ·98	3 O 12 ·51	5 N 11 [○] ·04	6 D 10 ·57	86	1 Jr 9 ·10		2 F 7 ·63	4 Mr 9 ·16	
6 S 2 ·34	7 O 1 ·88	2 O 31 [○] ·41	3 N 29 ·94	87	5 D 29 ·47	87	7 Jr 28 ·00	1 F 26 ·53	
5 S 21 ·24	6 O 20 ·77	1 N 19 ·30	2 D 18 ·83	88	4 Jr 17 ·36		5 F 15 ·90	7 Mr 16 [○] ·43	
2 S 9 ·61	4 O 9 [●] ·14	5 N 7 ·67	7 D 7 ·20	89	1 Jr 5 ·73		3 F 4 ·26	4 Mr 5 [○] ·79	
6 Au 29 [○] ·98	1 S 28 ·51	3 O 28 ·04	4 N 26 ·57	90	6 D 26 ·10	90	7 Jr 24 ·63	2 F 23 [○] ·16	
5 S 17 ·87	7 O 17 ·40	1 N 15 ·94	3 D 15 ·47	91	5 Jr 14 ·00		6 F 12 ·53	1 Mr 14 ·06	
3 S 7 ·24	4 O 6 ·77	6 N 5 ·30	7 D 4 ·83	92	2 Jr 3 ·36		3 F 1 [●] ·89	5 Mr 2 ·42	
7 Au 26 ·61	{ 2 S 25 ·14 3 O 24 ·67	Margasira Kshaya		5 N 23 ·20	6 D 22 [○] ·73	93	1 Jr 21 ·26	2 F 19 ·79	
6 S 14 ·51				4 D 12 [○] ·10	94	5 Jr 10 ·63	7 F 9 ·16	1 Mr 10 ·69	
3 S 3 ·87				1 D 1 [●] ·46	95	3 D 31 ·00	4 Jr 29 ·53	6 F 28 ·06	
2 S 22 ·77	4 O 22 ·30	5 N 20 [●] ·83	7 D 20 ·36	96	1 Jr 18 ·89		3 F 17 ·42	4 Mr 17 ·95	
7 S 11 ·14	1 O 10 [○] ·67	3 N 9 ·20	4 D 8 ·73	97	6 Jr 7 ·26		7 F 5 ·79	2 Mr 7 ·32	
4 Au 31 ·50	6 S 30 [○] ·04	7 O 29 ·57	2 N 28 ·10	98	3 D 27 ·63	98	5 Jr 26 ·16	6 F 24 ·69	
3 S 19 [○] ·40	4 O 18 ·93	6 N 17 ·46	7 D 16 ·99	99	2 Jr 15 ·52		4 F 14 ·06	5 Mr 15 [●] ·59	
7 S 8 ·77	2 O 8 ·30	3 N 6 ·83	5 D 6 ·36	900	6 Jr 4 ·89		1 F 3 [○] ·42	2 Mr 3 ·95	

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	☉'s Anom col. 6				☉'s Anom col. 7				+ 29°53059				+ 59°06117				+ 88°59176				+ 118°12235							
							☾'s Anom col. 7				+ 1°976				+ 3°952				+ 5°928				+ 7°904											
							Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada											
Month and day A.D.	Fraction of day.						Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction				
4001	957	822	21M	·8333	11·65384	3·138	900	3	4	Ap	2	·49	6	My	2	·02	7	My	31	·55	2	Je	30	·08	3	Jl	29	0	·61	4	Je	29	0	·61
4002	958	823	22M	·0920	0·76328	26·850	901	5	1	Mr	22	·86	4	My	20	·92	6	Je	19	·45	7	Jl	18	0	·98	2	Au	17	·51	3	Je	18	0	·51
4003	959	824	22M	·3507	19·40129	24·984	902	6	7	Ap	10	·75	2	My	10	·28	3	Je	8	·82	5	Jl	8	·35	6	Au	6	·88	7	My	7	·88	7	·88
4004	960	825	22M	·6094	8·50973	21·142	903	7	5	Mr	31	·12	6	Ap	29	·65	1	My	29	0	·18	2	Je	27	·71	4	Jl	27	·24	5	Je	26	·24	·24
4005	961	826	21M	·8680	27·14876	19·275	904	1	4	Ap	18	·02	5	My	17	0	·55	7	Je	16	·08	1	Jl	15	·61	3	Au	14	·14	4	Je	13	·14	·14
4006	962	827	22M	·1267	16·25719	15·433	905	3	1	Ap	7	·39	2	My	6	0	·92	4	Je	5	·45	5	Jl	4	·98	7	Au	3	·51	8	My	2	·51	·51
4007	963	828	22M	·3854	5·36563	11·591	906	4	5	Mr	27	·75	7	Ap	26	·28	1	My	25	·81	3	Je	24	·34	6	Au	22	·41	7	My	21	·41	·41	
4008	964	829	22M	·6441	24·00466	9·725	907	5	4	Ap	15	·65	6	My	15	·18	7	Je	13	·71	2	Jl	13	·24	3	Au	11	·77	4	Je	12	·77	·77	
4009	965	830	21M	·9028	13·11308	5·883	908	6	2	Ap	4	·02	3	My	3	·55	5	Je	2	·08	6	Jl	1	·61	1	Jl	31	·14	2	Je	30	·14	·14	
4010	966	831	22M	·1614	2·22152	2·040	909	1	6	Mr	24	·39	7	Ap	22	·92	3	Je	20	·98	5	Jl	20	·51	7	Au	19	0	·04	8	My	18	0	·04
4011	967	832	22M	·4201	20·86055	0·174	910	2	5	Ap	12	·28	6	My	11	·81	1	Je	10	·34	2	Jl	9	0	·87	4	Au	8	·40	5	Je	7	·40	·40
4012	968	833	22M	·6788	9·96898	23·886	911	3	2	Ap	1	·65	4	My	1	·18	5	My	30	·71	7	Je	29	0	·24	1	Jl	28	·77	2	Je	27	·77	·77
4013	969	834	21M	·9375	28·60801	22·020	912	4	1	Ap	19	·55	3	My	19	·08	4	Je	17	0	·61	6	Jl	17	·14	7	Au	15	·67	8	My	14	·67	·67
4014	970	835	22M	·1962	17·71644	18·178	913	6	5	Ap	8	·92	7	My	8	·44	1	Je	6	·98	3	Jl	6	·51	5	Au	5	·04	6	My	4	·04	·04	
4015	971	836	22M	·4549	6·82487	14·335	914	7	3	Mr	29	·28	4	Ap	27	0	·81	6	My	27	·34	7	Je	25	·88	4	Au	24	·94	5	Je	23	·94	·94
4016	972	837	22M	·7135	25·46390	12·469	915	1	2	Ap	17	0	3	My	16	·71	5	Je	15	·24	6	Jl	14	·77	1	Au	13	·30	2	Je	12	·30	·30	
4017	973	838	21M	·9722	14·57234	8·627	916	2	6	Ap	5	0	1	My	5	·08	2	Je	3	·61	4	Jl	3	·14	5	Au	1	·67	6	My	1	·67	·67	
4018	974	839	22M	·2309	3·68077	4·785	917	4	3	Mr	25	·91	5	Ap	24	·44	6	My	23	·97	3	Jl	22	·04	4	Au	20	·57	5	Je	19	·57	·57	
4019	975	840	22M	·4896	22·31980	2·910	918	5	2	Ap	13	·81	4	My	13	·34	5	Je	11	·87	7	Jl	11	·40	2	Au	10	0	·93	3	Je	10	·93	·93
4020	976	841	22M	·7483	11·42823	26·631	919	6	7	Ap	3	·18	1	My	2	·71	3	Je	1	·24	4	Je	30	·77	6	Jl	30	0	·30	7	My	29	0	·30
4021	977	842	22M	·0069	0·53666	22·789	920	7	4	Mr	22	·54	7	My	20	·61	2	Je	19	·14	3	Jl	18	·67	5	Au	17	·20	6	My	16	·20	·20	
4022	978	843	22M	·2656	19·17569	20·922	921	2	3	Ap	10	·44	4	My	9	·97	6	Je	8	0	·50	1	Jl	8	·03	2	Au	6	·56	3	Je	5	·56	·56
4023	979	844	22M	·5243	8·28413	17·080	922	3	7	Mr	30	·81	2	Ap	29	·34	3	My	28	0	·87	5	Je	27	·40	6	Jl	26	·93	7	My	25	·93	·93
4024	980	845	22M	·7830	26·92314	15·214	923	4	6	Ap	18	·71	1	My	18	0	·24	2	Je	16	·77	4	Jl	16	·30	5	Au	14	·83	6	My	13	·83	·83
4025	981	846	22M	·0417	16·03158	11·372	924	5	4	Ap	7	·07	5	My	6	·60	7	Je	5	·14	1	Jl	4	·67	3	Au	3	·20	4	Je	2	·20	·20	
4026	982	847	22M	·3003	5·14002	7·529	925	7	1	Mr	27	0	2	Ap	25	·97	4	My	25	·50	7	Jl	23	·56	2	Au	22	·09	3	Je	21	·09	·09	
4027	983	848	22M	·5590	23·77904	5·663	926	1	7	Ap	15	·34	1	My	14	·87	3	Je	13	·40	4	Jl	12	·93	6	Au	11	·46	7	My	10	·46	·46	
4028	984	849	22M	·8177	12·88748	1·821	927	2	4	Ap	4	·71	6	My	4	·24	7	Je	2	·77	2	Jl	2	·30	3	Jl	31	·83	4	Je	30	·83	·83	
4029	985	850	22M	·0764	1·99592	25·533	928	3	2	Mr	24	·07	3	Ap	22	·60	6	Je	20	·66	1	Jl	20	0	·20	2	Au	18	·73	3	Je	17	·73	·73
4030	986	851	22M	·3351	20·63493	23·667	929	5	7	Ap	11	·97	2	My	11	·50	4	Je	10	·03	5	Jl	9	0	·56	7	Au	8	·09	8	My	7	·09	·09
4031	987	852	22M	·5937	9·74337	19·822	930	6	5	Ap	1	·34	6	Ap	30	·87	1	My	30	·40	2	Je	28	0	·93	4	Jl	28	·46	5	Je	27	·46	·46
4032	988	853	22M	·8524	28·38240	17·959	931	7	4	Ap	20	·24	5	My	19	·77	7	Je	18	·30	1	Jl	17	·83	3	Au	16	·36	4	Je	15	·36	·36	
4033	989	854	22M	·1111	17·49083	14·116	932	1	1	Ap	8	·60	3	My	8	0	·13	4	Je	6	·66	6	Jl	6	·19	7	Au	4	·72	8	My	3	·72	·72
4034	990	855	22M	·3698	6·59927	10·274	933	3	5	Mr	28	·97	7	Ap	27	0	·50	2	My	27	·03	3	Je	25	·56	6	Au	23	·62	7	My	22	·62	·62
4035	991	856	22M	·6285	25·23830	8·408	934	4	4	Ap	16	0	6	My	16	·40	7	Je	14	·93	2	Jl	14	·46	3	Au	12	·99	4	Je	11	·99	·99	
4036	992	857	22M	·8871	14·34672	4·565	935	5	2	Ap	6	·23	3	My	5	·76	5	Je	4	·30	6	Jl	3	·83	1	Au	2	·36	2	Je	1	·36	·36	
4037	993	858	22M	·1458	3·45516	0·723	936	6	6	Mr	25	·60	1	Ap	24	·13	4	Je	22	·19	5	Jl	21	·72	7	Au	20	0	·25	8	My	19	0	·25
403																																		

N.B.—For Surya Siddhanta figures for A.D. 500 to A.D. 999 see pages 76—79 below.

rya Siddhanta.

+ 147·65293				+ 177·18353				+ 206·71411				+ 236·24470				+ 265·77529				+ 295·30588				{ + 324·83647											
+ 9·880				+ 11·856				+ 13·832				+ 15·808				+ 17·784				+ 19·760				{ + 354·36705											
																								{ + 21·736											
																								{ + 23·712											
Asvina				Kartika				Margasira				Pausha				A.D.				Magha				A.D.				Phalguna				Chaitra			
Week-day Month Day				Week-day Month Day				Week-day Month Day				Week-day Month Day								Week-day Month Day								Week-day Month Day				Week-day Month Day			
Fraction				Fraction				Fraction				Fraction								Fraction								Fraction				Fraction			
5 Au	28	·14	6 S	26	·67	1 O	26	·20	2 N	24	·73						4 D	24	·26	01		5 Jr	22●	·80	7 F	21	·33								
4 S	16	·04	5 O	15	·57	7 N	14	·10	1 D	13	·63	02					3 Jr	12	·16			4 F	10	·69	6 Mr	12	·22								
1 S	5	·41	2 O	4	·94	4 N	3	·47	6 D	3○	·00	03					7 Jr	1	·53			2 Jr	31	·06	3 Mr	1	·59								
7 S	24	·30	1 O	23	·84	3 N	22○	·37	4 D	21	·90	04					6 Jr	20	·43			7 F	18	·96	2 Mr	19	·49								
4 S	12	·67	6 O	12	·20	7 N	10●○	·73	2 D	10	·26	05					3 Jr	8	·79			5 F	7	·32	6 Mr	8	·86								
2 S	2	·04	3 O	1	·57	5 O	31	·10	6 N	29	·63						1 D	29	·16	06		2 Jr	27	·69	4 F	26	·22								
7 S	20	·94	2 O	20	·47	4 N	19	·00	5 D	18	·53	07					7 Jr	17	·06			1 F	15	·59	3 Mr	17○	·12								
5 S	10○	·30	6 O	9●	·83	1 N	8	·36	1 D	7	·90	08					4 Jr	6	·43			5 F	4	·96	7 Mr	5●○	·49								
2 Au	29○	·67	4 S	28	·20	5 O	27	·73	7 N	26	·26						1 D	25	·79	09		3 Jr	24	·32	4 F	22	·85								
1 S	17	·57	3 O	17	·10	4 N	15	·63	6 D	15	·16	10					7 Jr	13	·69			2 F	12	·22	3 Mr	13	·75								
5 S	6	·94	6 O	6	·47	2 N	5	·00	3 D	4	·53	11					5 Jr	3○	·06			6 F	1●	·59	1 Mr	3	·12								
3 Au	27	·30	6 O	25	·36	7 N	23	·90	Pausha Kshaya								2 D	23○	·42	12		3 Jr	21	·96	{ 5 F	20	·49								
4 S	25	·84																						7 Mr		21	·02								
2 S	14	·20	3 O	13	·73	5 N	12	·26	6 D	11○	·79	13					1 Jr	10	·32			2 F	8	·86	4 Mr	10	·22								
6 S	3	·57	1 O	3	·10	2 N	1	·63	4 D	1	·16						5 D	30	·69	14		7 Jr	29	·22	1 F	27	·75								
5 S	22	·46	7 O	22○	·00	1 N	20●	·53	3 D	20	·06	15					4 Jr	18	·62			6 F	17	·12	7 Mr	18	·65								
2 S	11	·83	4 O	11○	·36	5 N	9	·90	7 D	9	·42	16					1 Jr	7	·96			3 F	6	·48	5 Mr	7	·02								
7 Au	31	·20	1 S	29○●	·73	3 O	29	·26	4 N	27	·79						6 D	27	·32	17		7 Jr	25	·85	2 F	24	·38								
6 S	19●	·10	7 O	18	·63	2 N	17	·16	3 D	16	·69	18					5 Jr	15	·22			6 F	13○	·75	1 Mr	15	·28								
3 S	8●	·46	4 O	7	·99	6 N	6	·52	1 D	6	·06	19					1 Jr	4	·59			4 F	3○	·12	5 Mr	4	·65								
7 Au	28	·83	2 S	27	·36	3 O	26	·89	5 N	25	·42						6 D	24	·95	20		1 Jr	23●	·48	3 F	22	·01								
6 S	15	·73	1 O	15	·26	2 N	13	·79	4 D	13○	·32	21					5 Jr	11●	·85			7 F	10	·38	1 Mr	11	·91								
4 S	5	·10	5 O	4	·63	7 N	3	·16	1 D	2○	·69	22					3 Jr	1	·22			4 Jr	30	·75	6 Mr	1	·28								
3 S	24	·00	4 O	23	·53	6 N	22○	·05	7 D	21	·58	23					2 Jr	20	·12			3 F	18	·65	5 Mr	20	·18								
7 S	13	·36	1 O	12	·89	3 N	11●	·42	4 D	10	·95	24					6 Jr	9	·48			1 F	8	·01	2 Mr	8	·54								
4 S	1	·73	6 O	1	·26	7 O	30	·79	2 N	29	·32						3 D	28	·85	25		5 Jr	27	·38	6 F	25	·91								
3 S	20○	·62	5 O	20	·16	6 N	18	·69	1 D	18	·22	26					2 Jr	16	·75			4 F	15	·28	5 Mr	16○	·81								
7 S	9○	·99	2 O	9	·52	4 N	8	·05	5 D	7	·58	27					7 Jr	6	·11			1 F	4	·64	3 Mr	6●	·18								
6 Au	30●○	·36	6 S	28	·89	1 O	28	·42	2 N	26	·95						4 D	26	·48	28		6 Jr	25	·01	7 F	23●	·54								
4 S	17	·26	5 O	16	·79	7 N	15	·32	1 D	14	·85	29					3 Jr	13○	·38			4 F	11	·91	6 Mr	13	·44								
1 S	6	·62	3 O	6	·15	4 N	4	·68	6 D	4	·22	30					7 Jr	2○	·75			2 F	1	·28	3 Mr	2	·81								
6 Au	26	·99	2 O	25	·05	3 N	23	·58	5 D	23○	·11	31					6 Jr	21	·64			1 F	20	·17	2 Mr	21	·70								
7 S	25	·52																																	
4 S	14	·89	6 O	14	·42	7 N	12	·95	2 D	12●	·57	32					4 Jr	11	·01			5 F	9	·54	7 Mr	10	·07								
2 S	3	·26	3 O	2	·79	5 N	1○	·32	6 N	30	·85						1 D	30	·38	33		2 Jr	28	·91	4 F	27	·44								
1 S	22	·15	2 O	21○	·69	4 N	20	·21	5 D	19	·74	34					7 Jr	18	·28			1 F	16	·81	3 Mr	18	·34								
6 S	11	·52	7 O	11○	·05	1 N	9	·58	3 D	9	·11	35					4 Jr	7	·64			6 F	6	·17	7 Mr	7	·70								
2 Au	31	·89	4 S	30●	·42	5 O	29	·95	7 N	28	·48						2 D	28	·01	36		3 Jr	26	·54	5 F	25○	·07								
1 S	18●	·78	3 O	18	·32	4 N	16	·85	6 D	16	·38	37					7 Jr	14	·91			2 F	13●○	·44	3 Mr	14	·97								
6 S	8	·15	7 O	7	·68	2 N	6	·21	3 D	5	·74	38					5 Jr	4	·27			6 F	2●○	·80	1 Mr	4	·34								
5 Au	28	·52	5 S	27	·05	6 O	26	·58	1 N	25	·11						2 D	24○	·64	39		4 Jr	23●	·17	5 F	21	·70								

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	Vaisakha	Jyeshtha	Ashada	Shravana	Bhadrapada
									Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction
4040	996	861	22M	·9219	0·31105	18·727	939	3 { 7 Mr 23 ·23 1 Ap 21 ·76	3 My 21 ·29	4 Je 19○ ·82	6 Jl 19● ·36	7 Au 17	
4041	997	862	22M	·1805	18·95008	16·861	940	4 6 Ap 10 ·13	7 My 9 ·66	2 Je 8○ ·19	3 Jl 7● ·72	5 Au 6	
4042	998	863	22M	·4392	8·05851	13·019	941	6 3 Mr 30 ·50	5 Ap 29 ·03	6 My 28○ ·56	1 Je 27 ·09	2 Jl 26	
4043	999	864	22M	·6979	26·69754	11·152	942	7 2 Ap 18 ·40	3 My 17● ·93	5 Je 16 ·46	6 Jl 15 ·99	1 Au 14	
4044	1000	865	22M	·9566	15·80598	7·310	943	1 6 Ap 7○ ·76	1 My 7● ·29	2 Je 5 ·82	4 Jl 5 ·35	5 Au 3	
4045	1001	866	22M	·2153	4·91441	3·468	944	2 4 Mr 27○ ·13	5 Ap 25 ·67	7 My 25 ·19	3 Jl 23 ·25	4 Au 21	
4046	1002	867	22M	·4739	23·55343	1·601	945	4 3 Ap 15 ·83	4 My 14 ·56	6 Je 13 ·09	7 Jl 12 ·62	2 Au 11	
4047	1003	868	22M	·7326	12·66187	25·314	946	5 7 Ap 4 ·39	1 My 3 ·92	3 Je 2 ·46	4 Jl 1 ·99	6 Jl 31	
4048	1004	869	22M	·9913	1·77030	21·472	947	6 4 Mr 24 ·76	6 Ap 23 ·29	2 Je 21 ·35	3 Jl 20○ ·88	5 Au 19	
4049	1005	870	22M	·2500	20·40933	19·605	948	7 3 Ap 11 ·66	5 My 11 ·19	6 Je 9 ·72	1 Jl 9●○ ·25	7 Au 7	
4050	1006	871	22M	·5087	9·51777	15·763	949	2 1 Ap 1 ·03	2 Ap 30 ·56	4 My 30 ·09	5 Je 28● ·62	7 Jl 28	
4051	1007	872	22M	·7674	28·15678	13·896	950	3 6 Ap 19 ·92	1 My 19○ ·45	2 Je 17● ·98	4 Jl 17 ·52	6 Au 16	
4052	1008	873	23M	·0260	17·26522	10·055	951	4 4 Ap 9 ·29	5 My 8○ ·82	6 Je 7 ·35	1 Jl 6 ·88	3 Au 5	
4053	1009	874	22M	·2847	6·37366	6·212	952	5 1 Mr 28 ·66	3 Ap 27●○ ·19	4 My 26 ·72	6 Je 25 ·25	2 Au 23	
4054	1010	875	22M	·5434	25·01368	4·346	953	7 7 Ap 16● ·56	2 My 16 ·09	3 Je 14 ·62	5 Jl 14 ·15	6 Au 12	
4055	1011	876	22M	·8021	14·12112	0·504	954	1 4 Ap 5 ·92	6 My 5 ·45	7 Je 3 ·98	2 Jl 3 ·51	4 Au 2	
4056	1012	877	23M	·0608	3·22955	24·216	955	2 2 Mr 26 ·29	3 Ap 24 ·82	6 Je 22 ·88	1 Jl 22 ·41	2 Au 20○	
4057	1013	878	22M	·3194	21·86858	22·350	956	3 1 Ap 13 ·19	2 My 12 ·72	4 Je 11 ·25	5 Jl 10 ·78	7 Au 9	
4058	1014	879	22M	·5781	10·97701	18·508	957	5 5 Ap 2 ·55	7 My 2 ·08	1 My 31 ·62	3 Je 30 ·15	4 Jl 29	
4059	1015	880	22M	·8368	0·08538	14·665	958	6 { 2 Mr 22 ·92 4 Ap 21 ·45	5 My 20 ·98	7 Je 19○ ·51	2 Jl 19● ·04	3 Au 17	
4060	1016	881	23M	·0955	18·72508	12·800	959	7 1 Ap 10 ·82	3 My 10 ·35	4 Je 8●○ ·88	6 Jl 8 ·41	7 Au 6	
4061	1017	882	22M	·3542	7·83291	8·957	960	1 6 Mr 30 ·19	7 Ap 28 ·72	2 My 28● ·25	3 Je 26 ·78	5 Jl 26	
4062	1018	883	22M	·6128	26·47194	7·101	961	3 5 Ap 18○ ·08	6 My 17● ·61	1 Je 16 ·14	2 Jl 15 ·68	4 Au 14	
4063	1019	884	22M	·8715	15·58037	3·248	962	4 2 Ap 7○ ·45	3 My 6 ·98	5 Je 5 ·51	7 Jl 5 ·04	1 Au 3	
4064	1020	885	23M	·1302	4·68880	26·961	963	5 6 Mr 27○ ·82	1 Ap 26 ·35	2 My 25 ·88	5 Jl 23 ·94	7 Au 22	
4065	1021	886	22M	·3889	23·32783	25·094	964	7 5 Ap 14 ·72	7 My 14 ·25	1 Je 12 ·78	3 Jl 12 ·31	4 Au 10	
4066	1022	887	22M	·6476	12·43627	21·252	965	1 3 Ap 4 ·08	4 My 3 ·61	6 Je 2 ·14	7 Jl 1 ·67	2 Jl 31○	
4067	1023	888	22M	·9062	1·54469	17·410	966	2 7 Mr 24 ·45	1 Ap 22 ·98	5 Je 21 ·04	6 Jl 20○ ·57	1 Au 19	
4068	1024	889	23M	·1649	20·18373	15·544	967	3 6 Ap 12 ·35	7 My 11 ·88	2 Je 10 ·41	3 Jl 9● ·94	5 Au 8	
4069	1025	890	22M	·4236	9·29216	11·701	968	4 3 Mr 31 ·71	5 Ap 30 ·24	6 My 29○ ·78	1 Je 28 ·31	2 Jl 27	
4070	1026	891	22M	·6823	27·93118	9·835	969	6 2 Ap 19 ·61	4 My 19○ ·14	5 Je 17 ·67	7 Jl 17 ·20	1 Au 15	
4071	1027	892	22M	·9410	17·03962	5·993	970	7 6 Ap 8 ·98	1 My 8●○ ·51	3 Je 7 ·04	4 Jl 6 ·57	6 Au 5	
4072	1028	893	23M	·1996	6·14815	2·151	971	1 4 Mr 29 ·35	5 Ap 27 ·88	7 My 27 ·41	1 Je 25 ·94	5 Au 24	
4073	1029	894	22M	·4583	24·78707	0·284	972	2 3 Ap 16● ·24	4 My 15 ·77	6 Je 14 ·30	7 Jl 13 ·84	2 Au 12	
4074	1030	895	22M	·7170	13·89551	23·997	973	4 7 Ap 5 ·61	2 My 5 ·14	3 Je 3 ·67	5 Jl 3 ·20	6 Au 1	
4075	1031	896	22M	·9757	3·00395	20·154	974	5 4 Mr 25 ·98	6 Ap 24 ·51	2 Je 22 ·57	4 Jl 22 ·10	5 Au 20●	
4076	1032	897	23M	·2344	21·64287	18·288	975	6 3 Ap 13 ·88	5 My 13 ·41	6 Je 11 ·94	1 Jl 11 ·47	3 Au 10●	
4077	1033	898	22M	·4930	10·75140	14·446	976	7 1 Ap 2 ·24	2 My 1 ·77	4 My 31 ·30	5 Je 29○ ·83	7 Jl 29	

N.B.—For Surya Siddhanta figures for **A.D. 500** to **A.D. 999** see pages **76—79** below.

Arya Siddhanta.

+ 147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·30588	{ + 324·83647 + 354·36705 + 21·736 + 23·712		
+ 9·880	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760			
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction		Week-day Month Day Fraction		Week-day Month Day Fraction	Week-day Month Day Fraction
2 S 16 ·42	3 O 15 ·95	5 N 14 ·48	7 D 14 [○] ·01	40	1 Jr 12 ·54		3 F 11 ·07	4 Mr 11 ·60
6 S 4 ·78	1 O 4 ·31	2 N 2 ·84	4 D 2 [○] ·38		5 D 31 ·91	41	7 Jr 30 ·44	1 F 28 ·97
5 S 23 ·68	7 O 23 ·21	1 N 21 ·74	3 D 21 ·27	42	4 Jr 19 ·80		6 F 18 ·33	7 Mr 19 ·86
3 S 13 ·05	4 O 12 ·58	6 N 11 [●] ·11	7 D 10 ·64	43	2 Jr 9 ·17		3 F 7 ·70	5 Mr 9 ·23
7 S 2 ·42	1 O 1 [○] ·95	3 O 31 ·48	5 N 30 ·01		6 D 29 ·54	44	1 Jr 28 ·07	2 F 26 ·60
6 S 20 [○] ·31	7 O 19 ·84	2 N 18 ·37	3 D 17 ·90	45	5 Jr 16 ·44		6 F 14 ·96	1 Mr 16 ·50
3 S 9 [○] ·68	5 O 9 ·21	6 N 7 ·74	1 D 7 ·27	46	2 Jr 5 ·80		4 F 4 ·33	5 Mr 5 [●] ·86
1 Au 30 ·05	2 S 28 ·58	4 O 28 ·11	5 N 26 ·64		7 D 26 ·17	47	1 Jr 24 [○] ·70	3 F 23 ·23
6 S 17 ·94	1 O 17 ·48	3 N 16 ·01	4 D 15 ·54	48	6 Jr 14 [○] ·07		7 F 12 ·60	2 Mr 13 ·13
4 S 6 ·31	5 O 5 ·84	7 N 4 ·37	1 D 3 ·90	49	3 Jr 2 [○] ·43		4 Jr 31 ·96	6 Mr 2 ·50
1 Au 26 ·68	4 O 24 ·74	6 N 23 ·27	7 D 22 [●] ·80	50	2 Jr 21 ·33		3 F 19 ·86	5 Mr 21 ·39
3 S 25 ·21								
7 S 14 ·58	2 O 14 ·11	3 N 12 [○] ·64	8 D 12 ·17	51	6 Jr 10 ·70		1 F 9 ·23	2 Mr 10 ·76
4 S 3 ·94	6 O 3 ·47	1 N 2 [○] ·00	2 D 1 ·54		4 D 31 ·07	52	5 Jr 29 ·60	7 F 28 ·13
3 S 21 ·84	5 O 21 [○] ·37	6 N 19 ·90	1 D 19 ·43	53	2 Jr 17 ·96		4 F 16 ·49	6 Mr 18 ·02
1 S 11 ·21	2 O 10 ·74	4 N 9 ·27	5 D 8 ·80	54	7 Jr 7 ·33		1 F 5 ·86	3 Mr 7 [○] ·39
5 Au 31 [○] ·58	7 S 30 ·11	1 O 29 ·64	3 N 28 ·17		4 D 27 ·70	55	6 Jr 26 ·23	7 F 24 ^{●○} ·76
4 S 19 ·47	6 O 19 ·00	7 N 17 ·53	2 D 17 ·06	56	3 Jr 15 ·60		5 F 14 [○] ·13	6 Mr 14 ·06
1 S 7 ·84	3 O 7 ·37	4 N 5 ·90	6 D 5 ·43	57	7 Jr 3 [○] ·96		2 F 2 ·49	4 Mr 4 ·02
6 Au 28 ·21	7 S 26 ·74	2 O 26 ·27	3 N 24 ·80		5 D 24 [○] ·33	58	6 Jr 22 ·86	1 F 21 ·39
5 S 16 ·10	6 O 15 ·64	1 N 14 ·17	2 D 13 ^{●○} ·70	59	4 Jr 12 ·23		5 F 10 ·76	7 Mr 12 ·29
2 S 5 ·47	4 O 5 ·00	5 N 3 ·53	7 D 3 ·06	60	1 Jr 1 ·59		3 Jr 31 ·12	4 F 29 ·66
1 S 23 ·37	2 O 22 ·90	4 N 21 ·43	5 D 20 ·96	61	7 Jr 19 ·49		2 F 18 ·02	3 Mr 19 ·55
5 S 12 ·74	7 O 12 [○] ·27	1 N 10 ·80	3 D 10 ·33	62	4 Jr 8 ·86		6 F 7 ·39	7 Mr 8 ·92
3 S 2 ·10	4 O 1 [○] ·63	6 O 31 ·16	7 N 29 ·70		2 D 29 ·23	63	3 Jr 27 ·76	5 F 26 ·29
2 S 21 [○] ·00	3 O 20 ·53	5 N 19 ·06	6 D 18 ·59	64	1 Jr 17 ·12		2 F 15 ·65	4 Mr 16 ·18
3 S 9 ·37	7 O 8 ·90	2 N 7 ·43	3 D 6 ·96	65	5 Jr 5 ·49		7 F 4 [○] ·02	1 Mr 5 [●] ·55
3 Au 29 ·74	5 S 28 ·27	6 O 27 ·80	1 N 26 ·33		2 D 25 ·86	66	4 Jr 24 [○] ·39	6 F 22 ·92
2 S 17 ·83	4 O 17 ·16	5 N 15 ·69	7 D 15 ·22	67	1 Jr 13 [○] ·76		3 F 12 ·29	4 Mr 13 ·82
7 S 7 ·00	1 O 6 ·53	3 N 5 ·06	4 D 4 ·59	68	6 Jr 3 ·12		7 F 1 ·65	2 Mr 2 ·18
4 Au 26 ·37	7 O 24 ·43	1 N 22 [○] ·96	3 D 22 [●] ·49	69	5 Jr 21 ·02		6 F 19 ·55	1 Mr 21 ·08
5 S 24 ·90								
3 S 14 ·26	4 O 13 ·80	6 N 12 [○] ·33	7 D 11 ·87	70	2 Jr 10 ·39		3 F 8 ·92	5 Mr 10 ·45
7 S 3 ·63	2 O 3 ·16	3 N 1 ^{●○} ·69	5 D 1 ·22		6 D 30 ·75	71	1 Jr 29 ·28	2 F 27 ·82
6 S 22 ·53	1 O 22 [●] ·06	2 N 20 ·56	4 D 20 ·12	72	5 Jr 18 ·65		7 F 17 ·18	1 Mr 17 [○] ·71
3 S 10 [○] ·90	5 O 10 [●] ·43	7 N 8 ·96	1 D 8 ·49	73	3 Jr 7 ·02		4 F 5 ·55	6 Mr 7 [○] ·08
1 Au 31 [○] ·26	2 S 29 ·79	4 O 29 ·32	5 N 27 ·86		7 D 27 ·39	74	1 Jr 25 ·92	3 F 24 ^{●○} ·45
5 S 19 ·16	1 O 18 ·69	3 N 17 ·22	4 D 16 ·75	75	6 Jr 15 ·28		7 F 13 [●] ·81	2 Mr 15 ·34
4 S 8 ·53	6 O 8 ·06	7 N 6 ·59	2 D 6 ·12	76	3 Jr 4 [○] ·65		5 F 3 ·18	6 Mr 3 ·71
1 Au 27 ·90	3 S 26 ·43	4 O 25 ·96	6 N 24 ·49		1 D 24 [○] ·02	77	2 Jr 22 ·55	{ 4 F 21 ·08 5 Mr 22 ·61

TABLE X-

Kaliyuga.	Vikrama Era.	Saka Era.	Month and day A. D.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A. D.	Week-day of 1st January.	☉'s Anom col. 6					☾'s Anom col. 7					☉'s Anom col. 6					☾'s Anom col. 7					☉'s Anom col. 6					☾'s Anom col. 7									
			Fraction of day.						Vaisakha					Jyeshtha					Ashada					Sravana					Bhadrapada														
									Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction							
4078	1034	899	22M	·7517	29.39043	12.580	977	2	7	Ap	21	·14	1	My	20	·67	3	Je	19	○	·20	4	Jl	18	·73	6	Au	17	·2														
4079	1035	900	23M	·0104	18.49886	8.737	978	3	4	Ap	10	·51	6	My	10	·04	7	Je	8	●	·57	2	Jl	8	·10	3	Au	6	·6														
4080	1036	901	23M	·2691	7.60730	4.895	979	4	1	Mr	30	·87	3	Ap	29	○	·40	4	My	28	·94	6	Je	27	·47	2	Au	25	·5														
4081	1037	902	22M	·5278	26.24633	3.029	980	5	7	Ap	17	○	·77	2	My	17	●	·30	3	Je	15	·83	5	Jl	15	·36	6	Au	13	·8													
4082	1038	903	22M	·7864	15.35476	26.741	981	7	5	Ap	7	○	·14	6	My	6	·67	1	Je	5	·20	2	Jl	4	·73	4	Au	3	·2														
4083	1039	904	23M	·0451	4.46319	22.899	982	1	2	Mr	27	●	·51	4	Ap	26	·04	5	My	25	·57	1	Jl	23	·63	3	Au	22	·1														
4084	1040	905	23M	·3038	23.10222	21.033	983	2	1	Ap	15	·40	2	My	14	·93	4	Je	13	·46	6	Jl	13	·00	7	Au	11	○	·5														
4085	1041	906	22M	·5625	12.21065	17.190	984	3	5	Ap	3	·77	7	My	3	·30	1	Je	1	·83	3	Jl	1	·36	4	Jl	30	○	·8														
4086	1042	907	22M	·8212	1.31909	13.348	985	5	3	Mr	24	·14	4	Ap	22	·69	7	Je	20	·73	2	Jl	20	○	·26	3	Au	18	·7														
4087	1043	908	23M	·0799	19.95812	11.482	986	6	2	Ap	12	·03	3	My	11	·58	5	Je	10	○	·10	6	Jl	9	·63	1	Au	8	·1														
4088	1044	909	23M	·3385	9.06654	7.640	987	7	6	Ap	1	·40	7	Ap	30	·93	2	My	30	○	·46	3	Je	28	·99	5	Jl	28	·5														
4089	1045	910	22M	·5972	27.70557	5.773	988	1	5	Ap	19	·30	6	My	18	○	·83	1	Je	17	·36	2	Jl	16	·89	4	Au	15	·4														
4090	1046	911	22M	·8559	16.81401	1.931	989	3	2	Ap	8	·67	4	My	8	●	·20	5	Je	6	·73	7	Jl	6	·26	1	Au	4	·7														
4091	1047	912	23M	·1146	5.92244	25.643	990	4	7	Mr	29	○	·03	1	Ap	27	·56	3	My	27	·09	4	Je	25	·62	7	Au	23	·6														
4092	1048	913	23M	·3733	24.56147	23.777	991	5	5	Ap	16	·93	7	My	16	·46	1	Je	14	·99	3	Jl	14	·52	5	Au	13	·0															
4093	1049	914	22M	·6319	13.66991	19.935	992	6	3	Ap	5	·30	4	My	4	·83	6	Je	3	·36	7	Jl	2	·89	2	Au	1	·4															
4094	1050	915	22M	·8906	2.77833	16.093	993	1	7	Mr	25	·66	2	Ap	24	·20	5	Je	22	·26	6	Jl	21	·79	1	Au	20	●	·3														
4095	1051	916	23M	·1493	21.41764	14.227	994	2	6	Ap	13	·56	1	My	13	·10	1	Je	11	·62	4	Jl	11	○	·15	5	Au	9	·6														
4096	1052	917	23M	·4080	10.52511	10.385	995	3	3	Ap	2	·93	5	My	2	·46	6	My	31	·99	1	Je	30	○	·52	3	Jl	30	·0														
4097	1053	918	22M	·6667	29.16482	8.518	996	4	2	Ap	20	·83	4	My	20	·36	5	Je	18	·89	7	Jl	18	·42	1	Au	16	·9															
4098	1054	919	22M	·9253	18.27326	4.676	997	6	7	Ap	10	·19	1	My	9	○	·72	3	Je	8	·26	4	Jl	7	·79	6	Au	6	·3														
4099	1055	920	23M	·1840	7.38169	0.833	998	7	4	Mr	30	·56	6	Ap	29	○	·09	7	My	28	·62	2	Je	27	·15	5	Au	25	·2														
4100	1056	921	23M	·4427	26.02072	26.522	999	1	3	Ap	18	○	·46	4	My	17	·99	6	Je	16	·52	1	Jl	16	·05	2	Au	14	·5														

N.B.—For Surya Siddhanta figures for A.D. 500 to A.D. 999 see pages 76—79 below.

Arya Siddhanta.

+ 147.65293	+ 177.18353	+ 206.71411	+ 236.24470	+ 265.77529	+ 295.30588	+ 324.83647																	
+ 9.890	+ 11.856	+ 13.832	+ 15.808	+ 17.784	+ 19.760	+ 354.36705																	
						+ 21.736																	
						+ 23.712																	
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra															
Week-day	Week-day	Week-day	Week-day		Week-day		Week-day	Week-day															
Month	Month	Month	Month		Month		Month	Month															
Day	Day	Day	Day		Day		Day	Day															
Fraction	Fraction	Fraction	Fraction		Fraction		Fraction	Fraction															
7 S 15 .79 2 O 15 .32 3 N 13 .85 5 D 13● .39 78 6 Jr 11 .91 1 F 10 .45 2 Mr 11 .98	5 S 5 .16 6 O 4 .69 1 N 3 .22 2 D 2● .75 79 4 Jr 1 .28 5 Jr 30 .81 7 Mr 1 .34	4 S 24 .06 5 O 23○ .59 7 N 22 .12 1 D 21 .65 80 3 Jr 20 .18 4 F 18 .71 6 Mr 19 .24	1 S 12 .42 2 O 11○ .96 4 N 10 .49 6 D 10 .02 81 7 Jr 8 .55 2 F 7 .08 3 Mr 8 .61	5 S 1 .79 7 O 1○ .32 1 O 30 .85 3 N 29 .38 82 4 D 28 .91 6 Jr 27 .44 7 F 25 .98	4 S 20● .69 6 O 20 .22 7 N 18 .75 2 D 18 .28 83 3 Jr 16 .81 5 F 15○ .34 6 Mr 16 .87	2 S 10 .06 3 O 9 .59 5 N 8 .12 6 D 7 .65 84 1 Jr 6 .18 2 F 4○ .71 4 Mr 5 .24	6 Au 29 .42 7 S 27 .95 2 O 27 .48 4 N 26 .02 85 5 D 25 .55 7 Jr 24○ .08 1 F 22 .61	5 S 17 .32 6 O 16 .85 1 N 15 .38 2 D 14 .91 86 4 Jr 13● .44 5 F 11 .97 7 Mr 13 .50	2 S 6 .69 4 O 6 .22 5 N 4 .75 7 D 4○ .28 87 1 Jr 2 .81 3 F 1 .34 4 Mr 2 .87	7 Au 27 .05 3 O 25 .12 4 N 23○ .65 6 D 23 .18 88 7 Jr 21 .71 2 F 20 .24 3 Mr 20 .77	1 S 25 .58 7 O 13 .48 2 N 12●○ .01 3 D 11 .54 89 5 Jr 10 .07 6 F 8 .60 1 Mr 10 .14	5 S 13 .96 4 O 2 .84 6 N 1● .31 7 N 30 .91 90 2 D 30 .44 3 Jr 28 .97 5 F 27 .50	3 S 3 .32 3 O 21● .75 5 N 20 .28 6 D 19 .81 91 1 Jr 18 .34 2 F 16 .87 4 Mr 18●○ .40	2 S 22○ .22 3 O 21● .75 5 N 20 .28 6 D 19 .81 91 1 Jr 18 .34 2 F 16 .87 4 Mr 18●○ .40	6 S 11○ .58 1 O 11 .11 2 N 9 .64 4 D 9 .18 92 5 Jr 7 .71 7 F 6 .24 1 Mr 6●○ .77	3 Au 30○ .95 5 S 29 .48 7 O 29 .01 1 N 27 .54 93 3 D 27 .07 4 Jr 25 .60 6 F 24● .13	2 S 18 .85 4 O 18 .38 5 N 16 .91 7 D 16 .44 94 1 Jr 14○ .97 3 F 13 .50 5 Mr 15 .03	7 S 8 .22 1 O 7 .75 3 N 6 .28 4 D 5 .81 95 6 Jr 4●○ .34 5 F 2 .87 2 Mr 4 .40	4 Au 28 .58 6 S 27 .11 7 O 26 .64 2 N 25 .17 96 3 D 24 .70 5 Jr 23 .24 6 F 21 .77	3 S 15 .48 5 O 15 .01 6 N 13 .54 1 D 13● .07 97 2 Jr 11 .60 4 F 10 .13 1 Mr 22 .30	7 S 4 .85 2 O 4 .38 3 N 2○ .91 5 D 2 .44 98 6 D 31 .97 1 Jr 30 .50 5 Mr 11 .66	6 S 23 .74 1 O 23●○ .28 2 N 21 .81 4 D 21 .34 99 5 Jr 19 .87 7 F 18 .40 3 Mr 1 .03	4 S 13 .11 5 O 12●○ .64 7 N 11 .17 1 D 10 .70 10 3 Jr 9 .23 00 4 F 7 .76 6 Mr 8 .30

A.D.	Kaliyuga	Week day of 1st January		Commence- ment of Indian Solar Year.		First New-Moon in Solar Year	Anomaly of first New- Moon	A.D.	Kaliyuga	Week day of 1st January		Commence- ment of Indian Solar Year.		First New-Moon in Solar Year	Anomaly of first New- Moon	A.D.	Kaliyuga	Week day of 1st January		Commence- ment of Indian Solar Year.		First New-Moon in Solar Year	Anomaly of first New- Moon
		Day	Fraction of day							Day	Fraction of day							Day	Fraction of day				
500	3601	7	18M	·3613	27·3063	9·979		550	3651	7	19M	·2991	14·2718	18·737		600	3701	7	19M	·2369			
501	3602	1	18M	·6200	16·4146	6·137		551	3652	1	19M	·5579	3·3801	14·894		601	3702	1	19M	·4957			
502	3603	2	18M	·8788	5·5229	2·294		552	3653	2	18M	·8166	22·0190	13·028		602	3703	2	19M	·7345			
503	3604	4	19M	·1375	24·1618	0·427		553	3654	4	19M	·0754	11·1273	9·185		603	3704	4	20M	·0132			
504	3605	5	18M	·3963	13·2701	24·139		554	3655	5	19M	·3341	0·2356	5·343		604	3705	5	19M	·2720			
505	3606	6	18M	·6550	2·3784	20·296		555	3656	6	19M	·5929	18·8745	3·476		605	3706	6	19M	·5307			
506	3607	7	18M	·9138	21·0173	18·429		556	3657	7	18M	·8516	7·9828	27·188		606	3707	7	19M	·7895			
507	3608	2	19M	·1726	10·1256	14·587		557	3658	2	19M	·1104	26·6217	25·321		607	3708	2	20M	·0482			
508	3609	3	18M	·4313	28·7644	12·720		558	3659	3	19M	·3692	15·7300	21·478		608	3709	3	19M	·3070			
509	3610	4	18M	·6901	17·8727	8·877		559	3660	4	19M	·6279	4·8383	17·635		609	3710	4	19M	·5658			
510	3611	5	18M	·9488	6·9810	5·034		560	3661	5	18M	·8867	23·4772	15·769		610	3711	5	19M	·8245			
511	3612	7	19M	·2076	25·6199	3·168		561	3662	7	19M	·1454	12·5854	11·926		611	3712	7	20M	·0833			
512	3613	1	18M	·4663	14·7282	26·880		562	3663	1	19M	·4042	1·6937	8·083		612	3713	1	19M	·3420			
513	3614	2	18M	·7251	3·8365	23·037		563	3664	2	19M	·6629	20·3326	6·216		613	3714	2	19M	·6008			
514	3615	3	18M	·9869	22·4754	21·170		564	3665	3	18M	·9217	9·4409	2·374		614	3715	3	19M	·8595			
515	3616	5	19M	·2426	11·5837	17·327		565	3666	5	19M	·1805	28·0798	0·507		615	3716	5	20M	·1183			
516	3617	6	18M	·5014	0·6920	13·485		566	3667	6	19M	·4392	17·1881	24·219		616	3717	6	19M	·3771			
517	3618	7	18M	·7601	19·3309	11·618		567	3668	7	19M	·6980	6·2964	20·376		617	3718	7	19M	·6358			
518	3619	2	19M	·0189	8·4392	7·775		568	3669	1	18M	·9567	24·9353	18·509		618	3719	1	19M	·8946			
519	3620	3	19M	·2776	27·0781	5·908		569	3670	3	19M	·2155	14·0436	14·666		619	3720	3	20M	·1533			
520	3621	4	18M	·5364	16·1864	2·066		570	3671	4	19M	·4742	3·1519	10·824		620	3721	4	19M	·4121			
521	3622	5	18M	·7952	5·2947	25·777		571	3672	5	19M	·7330	21·7908	8·957		621	3722	5	19M	·6708			
522	3623	7	19M	·0569	23·9336	23·911		572	3673	6	18M	·9918	10·8991	5·114		622	3723	6	19M	·9296			
523	3624	1	19M	·3127	13·0419	20·068		573	3674	1	19M	·2505	0·0074	1·271		623	3724	1	20M	·1884			
524	3625	2	18M	·5714	2·1502	16·225		574	3675	2	19M	·5093	18·6463	26·959		624	3725	2	19M	·4471			
525	3626	3	18M	·8302	20·7891	14·358		575	3676	3	19M	·7680	7·7546	23·117		625	3726	3	19M	·7059			
526	3627	5	19M	·0889	9·8974	10·516		576	3677	5	19M	·0268	26·3935	21·250		626	3727	4	19M	·9646			
527	3628	6	19M	·3477	28·5362	8·649		577	3678	6	19M	·2855	15·5018	17·407		627	3728	6	20M	·2234			
528	3629	7	18M	·6065	17·6445	4·806		578	3679	7	19M	·5443	4·6101	13·564		628	3729	7	19M	·4821			
529	3630	1	18M	·8652	6·7528	0·963		579	3680	1	19M	·8031	23·2489	11·698		629	3730	1	19M	·7409			
530	3631	3	19M	·1240	25·3917	26·651		580	3681	3	19M	·0618	12·3572	7·855		630	3731	2	19M	·9996			
531	3632	4	19M	·3827	14·5000	22·809		581	3682	4	19M	·3206	1·4655	4·013		631	3732	4	20M	·2584			
532	3633	5	18M	·6415	3·6083	18·966		582	3683	5	19M	·5793	20·1044	2·145		632	3733	5	19M	·5172			
533	3634	6	18M	·9002	22·2472	17·099		583	3684	6	19M	·8381	9·2127	25·857		633	3734	6	19M	·7759			
534	3635	1	19M	·1590	11·3555	13·256		584	3685	1	19M	·0958	27·8516	23·990		634	3735	1	20M	·0347			
535	3636	2	19M	·4177	0·4638	9·414		585	3686	2	19M	·3556	16·9599	20·148		635	3736	2	20M	·2934			
536	3637	3	18M	·6765	19·1027	7·547		586	3687	3	19M	·6143	6·0682	16·305		636	3737	3	19M	·5522			
537	3638	4	18M	·9353	8·2110	3·704		587	3688	4	19M	·8731	24·7071	14·438		637	3738	4	19M	·8109			
538	3639	6	19M	·1940	26·8499	1·837		588	3689	6	19M	·1319	13·8154	10·595		638	3739	6	20M	·0697			
539	3640	7	19M	·4518	15·9582	25·549		589	3690	7	19M	·3906	2·9237	6·753		639	3740	7	20M	·3285			
540	3641	1	18M	·7115	5·0665	21·706		590	3691	1	19M	·6494	21·5626	4·886		640	3741	1	19M	·5872			
541	3642	2	18M	·9703	23·7054	19·840		591	3692	2	19M	·9081	10·6709	1·043		641	3742	2	19M	·8460			
542	3643	4	19M	·2290	12·8137	15·997		592	3693	4	19M	·1669	29·8098	26·731		642	3743	4	20M	·1047			
543	3644	5	19M	·4868	1·9220	12·154		593	3694	5	19M	·4256	18·4181	22·888		643	3744	5	20M	·3635			
544	3645	6	18M	·7466	20·5608	10·277		594	3695	6	19M	·6844	7·5264	19·045		644	3745	6	19M	·6223			
545	3646	1	19M	·0053	9·6691	6·445		595	3696	7	19M	·9432	26·1653	17·179		645	3746	7	19M	·8810			
546	3647	2	19M	·2641	28·3080	4·578		596	3697	2	19M	·2019	15·2736	13·336		646	3747	2	20M	·1298			
547	3648	3	19M	·5228	17·4163	0·735		597	3698	3	19M	·4607	4·3819	9·493		647	3748	3	20M	·3885			
548	3649	4	18M	·7816	6·5246	24·447		598	3699	4	19M	·7194	23·0207	7·627		648	3749	4	19M	·6573			
549	3650	6	19M	·0403	25·1635	22·580		599	3700	5	19M	·9782	12·1290	3·784		649	3750	5	19M	·9163			

for A.D. 500 to A.D. 999.

First New-Moon in Solar Year	Anomaly of first New-Moon	A.D.	Kaliyuga	Week-day of 1st January	Commence-ment of Indian Solar Year.	First New-Moon in Solar Year	Anomaly of first New-Moon	A.D.	Kaliyuga	Week-day of 1st January	Commence-ment of Indian Solar Year.	First New-Moon in Solar Year	Anomaly of first New-Moon
					Day	Fraction of day					Day	Fraction of day	
1-2373	27-496	650	3751	7	20M	·1748	17-7334	10-675	700	3801	7	20M	·1126
19-8762	25-629	651	3752	1	20M	·4335	6-8417	6-833	701	3802	1	20M	·3714
8-9845	21-786	652	3753	2	19M	·6923	25-4806	4-966	702	3803	2	20M	·6301
27-6234	19-919	653	3754	3	19M	·9511	14-5889	1-123	703	3804	3	20M	·8889
16-7317	16-077	654	3755	5	20M	·2098	3-6972	24-835	704	3805	5	20M	·1477
5-8400	12-234	655	3756	6	20M	·4686	22-3361	22-968	705	3806	6	20M	·4064
24-4789	10-367	656	3757	7	19M	·7273	11-4444	19-125	706	3807	7	20M	·6652
13-5872	6-524	657	3758	1	19M	·9861	0-5527	15-283	707	3808	1	20M	·9209
2-6955	2-681	658	3759	3	20M	·2448	19-1916	13-416	708	3809	3	20M	·1827
21-3344	0-815	659	3760	4	20M	·5036	8-2999	9-573	709	3810	4	20M	·4414
10-4427	24-527	660	3761	5	19M	·7623	26-9388	7-706	710	3811	5	20M	·7002
29-0816	22-660	661	3762	7	20M	·0211	16-0471	3-864	711	3812	6	20M	·9590
18-1899	18-817	662	3763	1	20M	·2799	5-1554	0-021	712	3813	1	20M	·2177
7-2982	14-974	663	3764	2	20M	·5386	23-7943	25-709	713	3814	2	20M	·4765
25-9370	13-107	664	3765	3	19M	·7974	12-9026	21-866	714	3815	3	20M	·7352
15-0453	9-265	665	3766	5	20M	·0561	2-0109	18-023	715	3816	4	20M	·9940
4-1536	5-423	666	3767	6	20M	·3149	20-6498	16-156	716	3817	6	20M	·2527
22-7925	3-555	667	3768	7	20M	·5737	9-7581	12-314	717	3818	7	20M	·5115
11-9008	27-267	668	3769	1	19M	·8324	28-3969	10-447	718	3819	1	20M	·7703
1-0091	23-425	669	3770	3	20M	·0912	17-5052	6-604	719	3820	3	21M	·0290
19-6480	21-558	670	3771	4	20M	·3499	6-6135	2-761	720	3821	4	20M	·2878
8-7563	17-715	671	3772	5	20M	·6087	25-2524	0-895	721	3822	5	20M	·5465
27-3952	15-848	672	3773	6	19M	·8674	14-3607	24-606	722	3823	6	20M	·8053
16-5035	12-006	673	3774	1	20M	·1262	3-4690	20-764	723	3824	1	21M	·0640
5-6118	8-163	674	3775	2	20M	·3850	22-1079	18-897	724	3825	2	20M	·3228
24-2507	6-296	675	3776	3	20M	·6437	11-2162	15-054	725	3826	3	20M	·5815
13-3590	2-453	676	3777	4	19M	·9025	0-3245	11-212	726	3827	4	20M	·8403
2-4673	26-165	677	3778	6	20M	·1612	18-9634	9-345	727	3828	6	21M	·0991
21-1062	24-298	678	3779	7	20M	·4200	8-0717	5-502	728	3829	7	20M	·3578
10-2145	20-456	679	3780	1	20M	·6787	26-7106	3-635	729	3830	1	20M	·6166
28-8534	18-589	680	3781	2	19M	·9375	15-8189	27-347	730	3831	2	20M	·8753
17-9617	14-746	681	3782	4	20M	·1962	4-9272	23-504	731	3832	4	21M	·1341
7-0700	10-903	682	3783	5	20M	·4550	23-5661	21-638	732	3833	5	20M	·3928
25-7088	9-037	683	3784	6	20M	·7138	12-6744	17-795	733	3834	6	20M	·6516
14-8171	5-194	684	3785	7	19M	·9725	1-7827	13-952	734	3835	7	20M	·9104
3-9254	1-351	685	3786	2	20M	·2313	20-4216	12-085	735	3836	2	21M	·1691
22-5643	27-039	686	3787	3	20M	·4900	9-5299	8-242	736	3837	3	20M	·4279
11-6726	23-196	687	3788	4	20M	·7488	28-1687	6-376	737	3838	4	20M	·6866
0-7809	19-354	688	3789	5	20M	·0075	17-2770	2-533	738	3839	5	20M	·9454
19-4198	17-487	689	3790	7	20M	·2663	6-3853	26-245	739	3840	7	21M	·2041
8-5281	13-644	690	3791	1	20M	·5251	25-0242	24-378	740	3841	1	20M	·4629
27-1670	11-777	691	3792	2	20M	·7838	14-1325	20-535	741	3842	2	20M	·7217
16-2753	7-935	692	3793	4	20M	·0426	3-2408	16-693	742	3843	3	20M	·9804
5-3836	4-093	693	3794	5	20M	·3013	21-8797	14-826	743	3844	5	21M	·2392
24-0225	2-225	694	3795	6	20M	·5601	10-9808	10-983	744	3845	6	20M	·4979
13-1308	25-937	695	3796	7	20M	·8188	0-0963	7-140	745	3846	7	20M	·7567
2-2391	22-094	696	3797	2	20M	·0776	18-7352	5-274	746	3847	1	21M	·0154
20-8780	20-227	697	3798	3	20M	·3364	7-8435	1-431	747	3848	3	21M	·2742
9-9863	16-384	698	3799	4	20M	·5951	26-4824	27-119	748	3849	4	20M	·5330
28-6251	14-518	699	3800	5	20M	·8539	15-5907	23-276	749	3850	5	20M	·7917

A.D.	Kaliyuga.	Week-day of 1st January		Commence- ment of Indian Solar Year.		First New-Moon in Solar Year	Anomaly of first New- Moon	A.D.	Kaliyuga	Week-day of 1st January		Commence- ment of Indian Solar Year.		First New-Moon in Solar Year	Anomaly of first New- Moon	A.D.	Kaliyuga	Week-day of 1st January		Commence- ment of Indian Solar Year.		First New-Moon in Solar Year	Anomaly of first New- Moon
		Day	Fraction of day	Day	Fraction of day					Day	Fraction of day	Day	Fraction of day					Day	Fraction of day	Day	Fraction of day		
750	3851	7	21M	0505	21-1951	2-613		800	3901	6	20M	9883	8-1606	11-371		850	3951	6	21M	9262			
751	3852	1	21M	3092	10-3034	26-325		801	3902	1	21M	2471	26-7995	9-504		851	3952	1	22M	1849			
752	3853	2	20M	5680	28-9423	24-458		802	3903	2	21M	5058	15-9078	5-661		852	3953	2	21M	4437			
753	3854	3	20M	8267	18-0506	20-615		803	3904	3	21M	7646	5-0161	1-819		853	3954	3	21M	7024			
754	3855	5	21M	0855	7-1589	16-772		804	3905	5	21M	0233	23-6550	27-507		854	3955	4	21M	9612			
755	3856	6	21M	3443	25-7978	14-906		805	3906	6	21M	2821	12-7633	23-664		855	3956	6	22M	2199			
756	3857	7	20M	6030	14-9061	11-063		806	3907	7	21M	5409	1-8716	19-821		856	3957	7	21M	4787			
757	3858	1	20M	8618	4-0144	7-220		807	3908	1	21M	7996	20-5105	17-954		857	3958	1	21M	7375			
758	3859	3	21M	1205	22-6532	5-353		808	3909	3	21M	0584	9-6188	14-112		858	3959	2	21M	9962			
759	3860	4	21M	3793	11-7615	1-511		809	3910	4	21M	3171	28-2577	12-245		859	3960	4	22M	2550			
760	3861	5	20M	6380	0-8698	25-223		810	3911	5	21M	5759	17-3660	8-402		860	3961	5	21M	5137			
761	3862	6	20M	8968	19-5087	23-356		811	3912	6	21M	8346	6-4743	4-559		861	3962	6	21M	7725			
762	3863	1	21M	1556	8-6170	19-513		812	3913	1	21M	0934	25-1131	2-693		862	3963	1	22M	0312			
763	3864	2	21M	4143	27-2559	17-646		813	3914	2	21M	3522	14-2214	26-404		863	3964	2	22M	2900			
764	3865	3	20M	6731	16-3642	13-804		814	3915	3	21M	6109	3-3297	22-562		864	3965	3	21M	5487			
765	3866	4	20M	9318	5-4725	9-961		815	3916	4	21M	8697	21-9686	20-695		865	3966	4	21M	8075			
766	3867	6	21M	1906	24-1114	8-094		816	3917	6	21M	1284	11-0769	16-852		866	3967	6	22M	0663			
767	3868	7	21M	4493	13-2197	4-251		817	3918	7	21M	3872	0-1852	13-009		867	3968	7	22M	3250			
768	3869	1	20M	7081	2-3280	0-409		818	3919	1	21M	6459	18-8241	11-143		868	3969	1	21M	5838			
769	3870	2	20M	9668	20-9669	26-096		819	3920	2	21M	9047	7-9324	7-300		869	3970	2	21M	8425			
770	3871	4	21M	2256	10-0752	22-254		820	3921	4	21M	1634	26-5713	5-433		870	3971	4	22M	1013			
771	3872	5	21M	4844	28-7141	20-387		821	3922	5	21M	4222	15-6796	1-590		871	3972	5	22M	3600			
772	3873	6	20M	7431	17-8224	16-544		822	3923	6	21M	6810	4-7879	25-302		872	3973	6	21M	6188			
773	3874	7	21M	0019	6-9307	12-701		823	3924	7	21M	9397	23-4268	23-435		873	3974	7	21M	8776			
774	3875	2	21M	2606	25-5696	10-835		824	3925	2	21M	1985	12-5351	19-593		874	3975	2	22M	1363			
775	3876	3	21M	5194	14-6779	6-992		825	3926	3	21M	4572	1-6434	15-750		875	3976	3	22M	3951			
776	3877	4	20M	7781	3-7862	3-149		826	3927	4	21M	7160	20-2823	13-883		876	3977	4	21M	6538			
777	3878	6	21M	0369	22-4250	1-282		827	3928	5	21M	9747	9-3906	10-040		877	3978	5	21M	9126			
778	3879	7	21M	2957	11-5333	24-994		828	3929	7	21M	2335	28-0295	8-174		878	3979	7	22M	1713			
779	3880	1	21M	5544	0-6416	21-152		829	3930	1	21M	4923	17-1378	4-331		879	3980	1	22M	4301			
780	3881	2	20M	8132	19-2805	19-284		830	3931	2	21M	7510	6-2461	0-488		880	3981	2	21M	6889			
781	3882	4	21M	0719	8-3888	15-442		831	3932	3	22M	0098	24-8849	26-176		881	3982	3	21M	9476			
782	3883	5	21M	3307	27-0277	13-575		832	3933	5	21M	2685	13-9932	22-333		882	3983	5	22M	2064			
783	3884	6	21M	5894	16-1360	9-733		833	3934	6	21M	5273	3-1015	18-491		883	3984	6	22M	4651			
784	3885	7	20M	8482	5-2443	5-890		834	3935	7	21M	7860	21-7404	16-624		884	3985	7	21M	7239			
785	3886	2	21M	1070	23-8832	4-023		835	3936	2	22M	0448	10-8487	12-781		885	3986	1	21M	9826			
786	3887	3	21M	3657	12-9915	0-180		836	3937	3	21M	3036	29-4876	10-914		886	3987	3	22M	2414			
787	3888	4	21M	6245	2-0998	23-892		837	3938	4	21M	5623	18-5959	7-072		887	3988	4	22M	5002			
788	3889	5	20M	8832	20-7387	22-025		838	3939	5	21M	8211	7-7042	3-229		888	3989	5	21M	7589			
789	3890	7	21M	1420	9-8470	18-183		839	3940	7	22M	0798	26-3431	1-362		889	3990	6	22M	0177			
790	3891	1	21M	4007	28-4859	16-316		840	3941	1	21M	3386	15-4514	25-074		890	3991	1	22M	2764			
791	3892	2	21M	6595	17-5942	12-473		841	3942	2	21M	5973	4-5597	21-231		891	3992	2	22M	5352			
792	3893	3	20M	9183	6-7025	8-630		842	3943	3	21M	8561	23-1986	19-364		892	3993	3	21M	7939			
793	3894	5	21M	1770	25-3413	6-764		843	3944	5	22M	1149	12-3069	15-522		893	3994	5	22M	0527			
794	3895	6	21M	4358	14-4496	2-921		844	3945	6	21M	3736	1-4152	11-679		894	3995	6	22M	3115			
795	3896	7	21M	6945	3-5579	26-633		845	3946	7	21M	6324	20-0541	9-812		895	3996	7	22M	5702			
796	3897	1	20M	9533	22-1968	24-766		846	3947	1	21M	8911	9-1624	5-969		896	3997	1	21M	8290			
797	3898	3	21M	2120	11-3051	20-923		847	3948	3	22M	1499	27-8012	4-103		897	3998	3	22M	0877			
798	3899	4	21M	4708	0-4134	17-080		848	3949	4	21M	4086	16-9095	0-260		898	3999	4	22M	3465			
799	3900	5	21M	7296	19-0523	15-214		849	3950	5	21M	6674	6-0178	23-972		899	4000	5	22M	6052			

for A.D. 500 to A.D. 999.

First New-Moon in Solar Year	Anomaly of first New-Moon	A.D.	Kaliyuga	Week-day of 1st January	Commence-ment of Indian Solar Year	Day	Fraction of day	First New-Moon in Solar Year	Anomaly of first New-Moon	A.D.	Kaliyuga	Week-day of 1st January	Commence-ment of Indian Solar Year	Day	Fraction of day	First New-Moon in Solar Year	Anomaly of first New-Moon
24-6567	22-105	900	4001	6	21M	·8640		11-6220	3-309	950	4051	6	22M	·8018		28-1184	14-043
13-7650	18-262	901	4002	1	22M	·1228		0-7306	27-021	951	4052	1	23M	·0606		17-2267	10-200
2-8733	14-419	902	4003	2	22M	·3815		19-3694	25-154	952	4053	2	22M	·3194		6-3350	6-357
21-5122	12-552	903	4004	3	22M	·6403		8-4777	21-311	953	4054	3	22M	·5781		24-9739	4-490
10-6205	8-170	904	4005	4	21M	·8090		27-1166	19-444	954	4055	4	22M	·8369		14-0822	0-648
29-2594	6-843	905	4006	6	22M	·1578		16-2249	15-602	955	4056	6	23M	·0956		3-1905	24-359
18-3677	3-000	906	4007	7	22M	·4165		5-3332	11-752	956	4057	7	22M	·3544		21-8293	22-493
7-4760	26-712	907	4008	1	22M	·6753		23-9721	9-892	957	4058	1	22M	·6131		10-9376	18-650
26-1149	24-845	908	4009	2	21M	·9341		13-0804	6-049	958	4059	2	22M	·8719		0-0459	14-807
15-2232	21-003	909	4010	4	22M	·1928		2-1887	2-207	959	4060	4	23M	·1306		18-6848	12-940
4-3315	17-160	910	4011	5	22M	·4516		20-8276	0-340	960	4061	5	22M	·3894		7-7931	9-098
22-9704	15-293	911	4012	6	22M	·7103		9-9359	24-052	961	4062	6	22M	·6482		26-4320	7-231
12-0787	11-450	912	4013	7	21M	·9691		28-5748	22-185	962	4063	7	22M	·9069		15-5403	3-388
1-1870	7-608	913	4014	2	22M	·2278		17-6831	18-342	963	4064	2	23M	·1657		4-6486	27-100
19-8259	5-741	914	4015	3	22M	·4866		6-7914	14-499	964	4065	3	22M	·4244		23-2875	25-233
8-9342	1-898	915	4016	4	22M	·7453		25-4303	12-633	965	4066	4	22M	·6832		12-3958	21-391
27-5730	0-031	916	4017	5	21M	·0041		14-5386	8-790	966	4067	5	22M	·9419		1-5041	17-548
16-6813	23-744	917	4018	7	22M	·2629		3-6469	4-947	967	4068	7	23M	·2007		20-1430	15-681
5-7896	19-901	918	4019	1	22M	·5216		22-2858	3-080	968	4069	1	22M	·4595		9-2513	11-838
24-4285	18-034	919	4020	2	22M	·7804		11-3941	26-792	869	4070	2	22M	·7182		27-8902	9-972
13-5368	14-191	920	4021	4	22M	·0391		0-5024	22-949	970	4071	3	22M	·9770		16-9985	6-129
2-6451	10-348	921	4022	5	22M	·2979		19-1412	21-083	971	4072	5	23M	·2357		6-1068	2-286
21-2840	8-481	922	4023	6	22M	·5566		8-2495	17-240	972	4073	6	22M	·4945		24-7457	0-419
10-3923	4-639	923	4024	7	22M	·8154		26-8884	15-373	973	4074	7	22M	·7532		13-8540	24-131
29-0312	2-772	924	4025	2	22M	·0742		15-9967	11-530	974	4075	1	23M	·0120		2-9623	20-288
18-1395	26-484	925	4026	3	22M	·3329		5-1050	7-688	975	4076	3	23M	·2708		21-6011	18-422
7-2478	22-641	926	4027	4	22M	·5917		23-7439	5-828	976	4077	4	22M	·6295		10-7094	14-579
25-8867	20-774	927	4028	5	22M	·8504		12-8522	1-978	977	4078	5	22M	·7883		29-3483	12-712
14-9950	16-932	928	4029	7	22M	·1092		1-9605	25-690	978	4079	7	23M	·0470		18-4566	8-869
4-1033	13-089	929	4030	1	22M	·3679		20-5994	23-823	979	4080	1	23M	·3058		7-5649	5-030
22-7422	11-222	930	4031	2	22M	·6267		9-7077	19-980	980	4081	2	22M	·5645		26-2038	3-160
11-8505	7-379	931	4032	3	22M	·8855		28-3466	18-114	981	4082	3	22M	·8233		15-3121	26-872
0-9588	3-537	932	4033	5	22M	·1442		17-4549	14-271	982	4083	5	23M	·0821		4-4204	23-029
19-5977	1-670	933	4034	6	22M	·4020		6-5632	10-428	983	4084	5	23M	·3408		23-0593	21-162
8-7060	25-382	934	4035	7	22M	·6617		25-2021	8-561	984	4085	7	22M	·5996		12-1676	17-319
27-3448	23-515	935	4036	1	22M	·9205		14-3104	4-719	985	4086	1	22M	·8583		1-2759	13-477
16-4531	19-672	936	4037	3	22M	·1792		3-4187	0-876	986	4087	3	23M	·1171		19-9148	11-610
5-5614	15-829	937	4038	4	22M	·4380		22-0575	26-564	987	4088	4	23M	·3758		9-0231	7-767
24-2003	13-963	938	4039	5	22M	·6968		11-1658	22-721	988	4089	5	22M	·6346		27-6620	5-900
13-3086	10-120	939	4040	6	22M	·9555		0-2741	18-878	989	4090	6	22M	·8994		16-7703	2-058
2-4169	6-277	940	4041	1	22M	·2143		18-9130	17-011	990	4091	1	23M	·1521		5-8786	25-769
21-0558	4-410	941	4042	2	22M	·4730		8-0213	13-169	991	4092	2	23M	·4109		24-5174	23-903
10-1641	0-568	942	4043	3	22M	·7318		26-6602	11-299	992	4093	3	22M	·6696		13-6257	20-060
28-8030	26-256	943	4044	4	22M	·9904		15-7685	7-459	993	4094	4	22M	·9284		2-7340	16-217
17-9113	22-413	944	4045	5	22M	·2493		4-8768	3-617	994	4095	6	23M	·1871		21-3729	14-350
7-0196	18-570	945	4046	7	22M	·5081		23-5157	1-750	995	4096	7	23M	·4459		10-4812	10-508
25-6585	16-703	946	4047	1	22M	·7668		12-6240	25-463	996	4097	1	22M	·7047		29-1201	8-641
14-7668	12-861	947	4048	2	22M	·0256		1-7323	21-612	997	4098	2	22M	·9634		18-2294	4-798
3-8751	9-018	948	4049	4	22M	·2843		20-3712	19-752	998	4099	4	23M	·2222		7-3367	0-955
22-5140	7-151	949	4050	5	22M	·5431		9-4795	15-909	999	4100	5	23M	·4809		25-9756	26-643

TABLE X-

Kaliyuga.	Vikramā Era.	Saka Era.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	☉'s Anom col. 6				☾'s Anom col. 7				+ 29-53059				+ 59-06117				+ 88-59176				+ 118-12235			
							Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada							
Month and day A.D.	Fraction of day.						Week-day Month Day	Fraction		Week-day Month Day	Fraction		Week-day Month Day	Fraction		Week-day Month Day	Fraction		Week-day Month Day	Fraction		Week-day Month Day	Fraction		Week-day Month Day	Fraction				
4101 1057 922 22M	7396	15-0839	22-801	1000	2	7 Ap 6	82		2 My 6	35	3 Je 4	88	5 Jl 4	41	6 Au 2	95														
4102 1058 923 22M	9983	4-1922	18-959	1001	4	5 Mr 27	19		6 Ap 25	72	1 My 25	25	4 Jl 23	31	5 Au 21	84														
4103 1059 924 23M	2571	22-8311	17-091	1002	5	4 Ap 15	09		5 My 14	62	7 Je 13	15	1 Jl 12	68	3 Au 11	21														
4104 1060 925 23M	5158	11-9394	13-249	1003	6	1 Ap 4	45		2 My 3	99	4 Je 2	52	6 Jl 2	05	7 Jl 31	58														
4105 1061 926 22M	7746	1-0477	9-406	1004	7	5 Mr 23	82		1 My 21	88	3 Je 20	41	4 Jl 19	94	6 Au 18	47														
4106 1062 927 23M	0334	19-6866	7-539	1005	2	4 Ap 11	72		6 My 11	25	7 Je 9	78	2 Jl 9	31	3 Au 7	84														
4107 1063 928 23M	2921	8-7949	3-696	1006	3	2 Ap 1	09		3 Ap 30	62	5 My 30	15	6 Je 28	68	1 Jl 28	21														
4108 1064 929 23M	5509	27-4338	1-830	1007	4	7 Ap 19	98		2 My 19	51	4 Je 18	05	5 Jl 17	58	7 Au 16	11														
4109 1065 930 22M	8096	16-5421	25-542	1008	5	5 Ap 8	35		6 My 7	88	1 Je 6	41	2 Jl 5	94	4 Au 4	47														
4110 1066 931 23M	0684	5-6504	21-699	1009	7	2 Mr 28	72		4 Ap 27	25	5 My 26	78	7 Je 25	31	3 Au 23	37														
4111 1067 932 23M	3271	24-2892	19-832	1010	1	1 Ap 16	62		3 My 16	15	4 Je 14	68	6 Jl 14	21	7 Au 12	74														
4112 1068 933 23M	5859	13-3975	15-989	1011	2	5 Ap 5	98		7 My 5	51	2 Je 4	04	3 Jl 3	57	5 Au 2	11														
4113 1069 934 22M	8446	2-5058	12-147	1012	3	3 Mr 25	35		4 Ap 23	88	7 Je 21	94	2 Jl 21	47	4 Au 20	00														
4114 1070 935 23M	1034	21-1447	10-280	1013	5	2 Ap 13	25		3 My 12	78	5 Je 11	31	6 Jl 10	84	1 Au 9	37														
4115 1071 936 23M	3622	10-2530	6-437	1014	6	6 Ap 2	61		1 My 2	15	2 My 31	68	4 Je 30	21	5 Jl 29	74														
4116 1072 937 23M	6209	28-8919	4-570	1015	7	5 Ap 21	51		7 My 21	04	1 Je 19	57	3 Jl 19	10	4 Au 17	63														
4117 1073 938 22M	8797	18-0002	0-727	1016	1	2 Ap 9	88		4 My 9	41	5 Je 7	94	7 Jl 7	47	2 Au 6	00														
4118 1074 939 23M	1384	7-1085	24-439	1017	3	7 Mr 30	25		1 Ap 28	78	3 My 28	31	4 Je 26	84	7 Au 24	90														
4119 1075 940 23M	3972	25-7474	22-573	1018	4	6 Ap 18	14		7 My 17	67	2 Je 16	21	3 Jl 15	74	5 Au 14	27														
4120 1076 941 23M	6559	14-8557	18-730	1019	5	3 Ap 7	51		5 My 7	04	6 Je 5	57	1 Jl 5	10	2 Au 3	63														
4121 1077 942 22M	9147	3-9640	14-887	1020	6	7 Mr 26	88		2 Ap 25	41	3 My 24	94	7 Jl 23	00	1 Au 21	53														
4122 1078 943 23M	1735	22-6029	13-020	1021	1	6 Ap 14	78		1 My 14	31	2 Je 12	84	4 Jl 12	37	5 Au 10	90														
4123 1079 944 23M	4322	11-7112	9-178	1022	2	4 Ap 4	14		5 My 3	67	7 Je 2	20	1 Jl 10	73	3 Jl 31	27														
4124 1080 945 23M	6910	0-8195	5-334	1023	3	1 Mr 24	51		4 My 22	57	6 Je 21	10	7 Jl 20	63	2 Au 19	16														
4125 1081 946 22M	9497	19-4584	3-468	1024	4	7 Ap 11	41		1 My 10	94	3 Je 9	47	5 Jl 9	00	6 Au 7	53														
4126 1082 947 23M	2085	8-5667	27-180	1025	6	4 Mr 31	77		6 Ap 30	31	7 My 29	84	2 Je 28	37	3 Jl 27	90														
4127 1083 948 23M	4672	27-2056	25-313	1026	7	3 Ap 19	67		5 My 19	20	6 Je 17	73	1 Jl 17	26	2 Au 15	79														
4128 1084 949 23M	7260	16-3139	21-470	1027	1	1 Ap 9	04		2 My 8	57	4 Je 7	10	5 Jl 6	63	7 Au 5	16														
4129 1085 950 22M	9848	5-4222	17-628	1028	2	5 Mr 28	41		6 Ap 26	94	1 My 26	47	3 Je 25	00	6 Au 23	06														
4130 1086 951 23M	2435	24-0610	15-761	1029	4	4 Ap 16	30		5 My 15	83	7 Je 14	37	1 Jl 13	90	3 Au 12	43														
4131 1087 952 23M	5023	13-1693	11-918	1030	5	1 Ap 5	67		3 My 5	20	4 Je 3	73	6 Jl 3	26	7 Au 10	79														
4132 1088 953 23M	7610	2-2776	8-075	1031	6	6 Mr 26	04		7 Ap 24	57	3 Je 22	63	5 Jl 22	16	6 Au 20	69														
4133 1089 954 22M	0198	20-9165	6-209	1032	7	4 Ap 12	94		6 My 12	47	1 Je 11	00	2 Jl 10	53	4 Au 9	06														
4134 1090 955 23M	2785	10-0218	2-366	1033	2	2 Ap 2	30		3 My 1	83	5 My 31	36	6 Je 29	89	1 Jl 29	43														
4135 1091 956 23M	5373	28-6637	0-499	1034	3	1 Ap 21	20		2 My 20	73	4 Je 19	26	5 Jl 18	79	7 Au 17	32														
4136 1092 957 23M	7960	17-7720	24-211	1035	4	5 Ap 10	57		7 My 10	10	1 Je 8	63	3 Jl 8	16	4 Au 6	69														
4137 1093 958 23M	0548	6-8803	20-368	1036	5	2 Mr 29	93		4 Ap 28	47	6 My 28	00	7 Je 26	53	3 Au 24	59														
4138 1094 959 23M	3136	25-5192	18-501	1037	7	1 Ap 17	83		3 My 17	36	4 Je 15	89	6 Jl 15	42	7 Au 13	95														
4139 1095 960 23M	5723	14-6275	14-659	1038	1	6 Ap 7	20		7 My 6	73	2 Je 5	26	3 Jl 4	79	5 Au 3	32														

Surya Siddhanta.

+ 147.65293	+ 177.18353	+ 206.71411	+ 236.24470	+ 265.77529	+ 295.30588	{ + 324.83647 + 354.36705 + 21.736 + 23.712		
+ 9.880	+ 11.856	+ 13.832	+ 15.808	+ 17.784	+ 19.760			
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction		Week-day Month Day Fraction		Week-day Month Day Fraction	Week-day Month Day Fraction
1 S 1 .48 3 O 1● .01 4 O 30 .54 6 N 29 .07	7 S 20● .37 1 O 19 .90 3 N 18 .43 4 D 17 .97			02	7 D 28 .60	01	2 Jr 27 .13 3 F 25○ .66	
					6 Jr 16 .50		1 F 15○ .03 2 Mr 16 .56	
4 S 9 .74 6 O 9 .27 7 N 7 .80 2 D 7 .33	2 Au 30 .11 3 S 28 .64 5 O 28 .17 6 N 26 .70			03	3 Jr 5 .86	04	5 F 4○ .39 6 Mr 5 .92	
1 S 17 .01 2 O 16 .54 4 N 15 .07 5 D 14○ .60				05	1 D 26 .23		2 Jr 24 .76 4 F 23 .29	
					7 Jr 13● .13		1 F 11 .66 3 Mr 13 .19	
5 S 6 .37 6 O 5 .90 1 N 4 .43 2 D 3○ .96	4 S 25 .27 5 O 24 .80 7 N 23○ .33 1 D 22 .86			06	4 Jr 2 .49		6 F 1 .03 7 Mr 2 .56	
				07	3 Jr 21 .39		4 F 19 .92 6 Mr 21 .45	
1 S 14 .64 3 O 14 .17 4 N 12 .70 6 D 12 .23	6 S 3 .00 7 O 2○ .53 2 N 1 .07 3 N 30 .60			08	7 Jr 10 .76	09	2 F 9 .29 3 Mr 9 .82	
4 S 21○ .90 6 O 21 .43 7 N 19 .96 2 D 19 .49				10	5 D 30 .13		6 Jr 28 .66 1 F 27 .19	
					4 Jr 18 .02		5 F 16 .55 7 Mr 18○ .09	
2 S 11○ .27 3 O 10 .80 5 N 9 .33 6 D 8 .86	6 Au 31 .64 1 S 30 .17 2 O 29 .70 4 N 28 .23			11	1 Jr 7 .39	12	2 F 5 .92 4 Mr 7 .45	
5 S 18 .53 7 O 18 .06 1 N 16 .59 3 D 16 .13				13	5 D 27 .76		7 Jr 26○ .29 1 F 24 .82	
				14	4 Jr 14○ .66		6 F 13 .19 7 Mr 14 .72	
2 S 7 .90 4 O 7 .43 5 N 5 .96 7 D 5 .49	7 Au 28 .27 1 S 26 .80 3 O 26 .33 4 N 24 .86			15	2 Jr 4● .02	16	3 F 2 .55 5 Mr 4 .08	
					6 D 24 .39	17	7 Jr 22 .92 { 2 F 21 .45 3 Mr 22 .98	
6 S 16 .17 7 O 15 .70 2 N 14○ .23 3 D 13 .76	3 S 4 .53 5 O 4 .06 6 N 2○ .59 1 D 2 .12			18	5 Jr 12 .29	19	6 F 10 .82 1 Mr 11 .35	
2 S 23 .43 3 O 22○ .96 5 N 21 .49 7 D 21 .02				19	2 D 31 .65	20	4 Jr 30 .19 5 F 28 .72	
				21	1 Jr 19 .55	21	3 F 18 .08 4 Mr 19 .61	
6 S 12 .83 1 O 12 .33 2 N 10 .86 4 D 10 .39	4 S 2○ .16 5 O 1 .69 7 O 31 .23 1 N 29 .76			22	5 Jr 8 .92	22	7 F 7 .45 1 Mr 8○ .98	
3 S 20 .06 4 O 19 .59 6 N 18 .12 7 D 17 .65				23	3 D 29 .29	23	4 Jr 27 .82 6 F 26○ .35	
				24	2 Jr 16 .18	24	3 F 14○ .71 5 Mr 16 .25	
7 S 9 .43 1 O 8 .96 3 N 7 .49 5 D 7 .02	4 Au 29 .80 6 S 28 .33 7 O 27 .86 2 N 26 .39			25	6 Jr 5 .55	25	1 F 4 .08 2 Mr 5 .61	
3 S 17 .69 5 O 17 .22 6 N 15 .75 1 D 15○ .29				26	3 D 25○ .92	26	5 Jr 24 .45 6 F 22 .98	
				27	2 Jr 13 .82	27	4 F 12 .35 5 Mr 12 .88	
1 S 6 .06 2 O 5 .59 4 N 4 .12 5 D 3●○ .65	6 S 24 .96 1 O 24 .49 3 N 23● .02 4 D 22 .55			28	7 Jr 2 .18	28	1 Jr 31 .71 3 Mr 2 .24	
4 S 14 .33 5 O 13○ .86 7 N 12● .39 1 D 11 .92				29	6 Jr 21 .08	29	7 F 19 .61 2 Mr 21 .14	
				30	3 Jr 10 .45	30	4 F 8 .98 6 Mr 10 .51	
1 S 3 .69 3 O 3○ .22 4 N 1● .75 6 D 1 .28	7 S 21●○ .59 2 O 21 .12 3 N 19 .65 5 D 19 .18			31	7 D 30 .81	31	2 Jr 29 .35 3 F 27 .88	
4 S 10● .96 6 O 10 .49 1 N 9 .02 2 D 8 .55				32	6 Jr 17 .71	32	1 F 16 .24 2 Mr 17 .77	
2 Au 31 .32 3 S 29 .85 5 O 29 .39 6 N 27 .92	4 S 14 .33 5 O 13○ .86 7 N 12● .39 1 D 11 .92			33	4 Jr 7 .08	33	5 F 5○ .61 7 Mr 7 .14	
1 S 19 .22 2 O 18 .75 4 N 17 .28 5 D 16 .81	2 Au 31 .32 3 S 29 .85 5 O 29 .39 6 N 27 .92			34	1 D 27 .45	34	2 Jr 25○ .98 4 F 24 .51	
	1 S 19 .22 2 O 18 .75 4 N 17 .28 5 D 16 .81				7 Jr 15● .34		1 F 13 .87 3 Mr 14 .41	
5 S 7 .59 7 O 7 .12 1 N 5 .65 3 D 5 .18	6 S 24 .96 1 O 24 .49 3 N 23● .02 4 D 22 .55			35	4 Jr 3● .71	35	6 F 2 .24 7 Mr 3 .77	
2 Au 27 .96 4 S 26 .49 6 O 26 .02 7 N 24○ .55				36	2 D 24 .08	36	3 Jr 22 .61 { 5 F 21 .14 6 Mr 22 .67	
1 S 15 .85 3 O 15 .38 4 N 13○ .91 6 D 13 .45	4 S 10● .96 6 O 10 .49 1 N 9 .02 2 D 8 .55			37	7 Jr 11 .98	37	2 F 10 .51 4 Mr 12 .04	
6 S 5 .22 7 O 4 .75 2 N 3○ .28 3 D 2 .81	2 Au 27 .96 4 S 26 .49 6 O 26 .02 7 N 24○ .55			38	5 Jr 1 .34	38	6 Jr 30 .87 1 F 29 .40	
5 S 23 .12 6 O 22● .65 1 N 21 .18 2 D 20 .71				39	4 Jr 19 .24	39	5 F 17 .77 7 Mr 19○ .30	
2 S 12○ .49 4 O 12 .02 5 N 10 .55 7 D 10 .08	1 S 15 .85 3 O 15 .38 4 N 13○ .91 6 D 13 .45			40	1 Jr 8 .61	40	3 F 7 .14 4 Mr 8○ .67	
6 S 1○ .85 1 O 1 .38 2 O 30 .91 4 N 29 .44	6 S 5 .22 7 O 4 .75 2 N 3○ .28 3 D 2 .81			41	5 D 28 .97	41	7 Jr 27 .51 2 F 26○ .04	

TABLE X-

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	☉'s Anom col. 6					☌'s Anom col. 7					☉'s Anom col. 6					☌'s Anom col. 7					☉'s Anom col. 6					☌'s Anom col. 7								
							Vaisakha					Jyeshtha					Ashada					Sravana					Bhadrapada													
							Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction		
4140	1096	961	23M .8311	3.7358	10.816	1039	2	3	Mr	27	.57	5	Ap	26	.10	6	My	25	.63	2	Jl	23	.69	4	Au	22	.00	2	3	Mr	27	.57	5	Ap	26	.10	6	My	25	.63
4141	1097	962	23M .0898	22.3747	9.949	1040	3	2	Ap	14	.46	3	My	13	.99	5	Je	12	.53	7	Jl	12	.06	1	Au	10	.50	3	2	Ap	14	.46	3	My	13	.99	5	Je	12	.53
4142	1098	963	23M .3486	11.4830	5.106	1041	5	6	Ap	3	.83	1	My	3	.36	2	Je	1	.89	4	Jl	10	.42	5	Jl	30	.92	4	1	Ap	23	.73	6	My	22	.26	1	Je	20	.00
4143	1099	964	23M .6073	0.5913	1.264	1042	6	4	Mr	24	.20	7	My	22	.26	1	Je	20	.79	3	Jl	20	.32	4	Au	18	.80	5	6	Ap	3	.83	1	My	3	.36	2	Je	1	.89
4144	1100	965	23M .8661	19.2302	26.952	1043	7	3	Ap	12	.10	4	My	11	.63	6	Je	10	.16	7	Jl	9	.69	2	Au	8	.20	6	5	Ap	22	.73	7	My	23	.27	2	Je	21	.01
4145	1101	966	23M .1249	8.3385	23.109	1044	1	7	Mr	31	.46	1	Ap	29	.99	3	My	29	.52	5	Je	28	.05	6	Jl	27	.50	1	7	Mr	31	.46	1	Ap	29	.99	3	My	29	.52
4146	1102	967	23M .3836	26.9773	21.242	1045	3	6	Ap	19	.36	7	My	18	.89	2	Je	17	.42	3	Jl	16	.95	5	Au	15	.40	3	6	Ap	19	.36	7	My	18	.89	2	Je	17	.42
4147	1103	968	23M .6424	16.0856	17.399	1046	4	3	Ap	8	.73	5	My	8	.26	6	Je	6	.79	1	Jl	6	.32	2	Au	4	.80	4	3	Ap	8	.73	5	My	8	.26	6	Je	6	.79
4148	1104	969	23M .9011	5.1939	13.557	1047	5	1	Mr	29	.09	2	Ap	27	.63	4	My	27	.16	5	Je	25	.69	1	Au	23	.70	5	1	Mr	29	.09	2	Ap	27	.63	4	My	27	.16
4149	1105	970	23M .1599	23.8328	11.690	1048	6	6	Ap	15	.99	1	My	15	.52	3	Je	14	.05	4	Jl	13	.58	6	Au	12	.10	6	6	Ap	15	.99	1	My	15	.52	3	Je	14	.05
4150	1106	971	23M .4186	12.9411	7.847	1049	1	4	Ap	5	.36	5	My	4	.89	7	Je	3	.42	1	Jl	2	.95	3	Au	10	.40	1	4	Ap	5	.36	5	My	4	.89	7	Je	3	.42
4151	1107	972	23M .6774	2.0494	4.004	1050	2	1	Mr	25	.73	3	Ap	24	.26	6	Je	22	.32	7	Jl	21	.85	2	Au	20	.30	2	1	Mr	25	.73	3	Ap	24	.26	6	Je	22	.32
4152	1108	973	23M .9362	20.6883	2.138	1051	3	7	Ap	13	.62	2	My	13	.15	3	Je	11	.69	5	Jl	11	.22	6	Au	9	.70	3	7	Ap	13	.62	2	My	13	.15	3	Je	11	.69
4153	1109	974	23M .1949	9.7966	25.849	1052	4	4	Ap	1	.99	6	My	1	.52	1	My	31	.05	2	Je	29	.58	4	Jl	29	.10	4	4	Ap	1	.99	6	My	1	.52	1	My	31	.05
4154	1110	975	23M .4537	28.4355	23.983	1053	6	3	Ap	20	.89	5	My	20	.42	6	Je	18	.95	1	Jl	18	.48	3	Au	17	.00	6	3	Ap	20	.89	5	My	20	.42	6	Je	18	.95
4155	1111	976	23M .7124	17.5438	20.140	1054	7	1	Ap	10	.26	2	My	9	.79	4	Je	8	.32	5	Jl	7	.85	7	Au	6	.30	7	1	Ap	10	.26	2	My	9	.79	4	Je	8	.32
4156	1112	977	23M .9711	6.6521	16.297	1055	1	5	Mr	30	.62	7	Ap	29	.15	1	My	28	.68	3	Je	27	.21	6	Au	25	.20	1	5	Mr	30	.62	7	Ap	29	.15	1	My	28	.68
4157	1113	978	23M .2299	25.2910	14.430	1056	2	4	Ap	17	.52	6	My	17	.05	7	Je	15	.58	2	Jl	15	.11	3	Au	13	.60	2	4	Ap	17	.52	6	My	17	.05	7	Je	15	.58
4158	1114	979	23M .4887	14.3993	10.588	1057	4	1	Ap	6	.89	3	My	6	.42	4	Je	4	.95	6	Jl	4	.48	1	Au	3	.00	4	1	Ap	6	.89	3	My	6	.42	4	Je	4	.95
4159	1115	980	23M .7474	3.5076	6.745	1058	5	6	Mr	27	.25	7	Ap	25	.79	3	Je	23	.85	5	Jl	23	.38	6	Au	21	.90	5	6	Mr	27	.25	7	Ap	25	.79	3	Je	23	.85
4160	1116	981	24M .0062	22.1465	4.878	1059	6	5	Ap	15	.15	6	My	14	.68	1	Je	13	.21	2	Jl	12	.74	4	Au	11	.20	6	5	Ap	15	.15	6	My	14	.68	1	Je	13	.21
4161	1117	982	23M .2650	11.2548	1.035	1060	7	2	Ap	3	.52	4	My	3	.05	5	Je	1	.58	7	Jl	10	.11	1	Jl	30	.60	7	2	Ap	3	.52	4	My	3	.05	5	Je	1	.58
4162	1118	983	23M .5237	0.3631	24.747	1061	2	6	Mr	23	.89	2	My	21	.95	4	Je	20	.48	6	Jl	20	.01	7	Au	18	.50	2	6	Mr	23	.89	2	My	21	.95	4	Je	20	.48
4163	1119	984	23M .7825	19.0020	22.880	1062	3	5	Ap	11	.78	7	My	11	.31	1	Je	9	.85	3	Jl	9	.38	4	Au	7	.90	3	5	Ap	11	.78	7	My	11	.31	1	Je	9	.85
4164	1120	985	24M .0412	8.1103	19.038	1063	4	3	Ap	1	.15	4	Ap	30	.68	6	My	30	.21	7	Je	28	.74	2	Jl	28	.20	4	3	Ap	1	.15	4	Ap	30	.68	6	My	30	.21
4165	1121	986	23M .3000	26.7491	17.171	1064	5	2	Ap	19	.05	3	My	18	.58	5	Je	17	.11	6	Jl	16	.64	1	Au	15	.10	5	2	Ap	19	.05	3	My	18	.58	5	Je	17	.11
4166	1122	987	23M .5587	15.8574	13.328	1065	7	6	Ap	8	.42	7	My	7	.95	2	Je	6	.48	4	Jl	6	.01	5	Au	4	.50	7	6	Ap	8	.42	7	My	7	.95	2	Je	6	.48
4167	1123	988	23M .8175	4.9657	9.485	1066	1	3	Mr	28	.78	5	Ap	27	.31	6	My	26	.84	2	Jl	24	.91	4	Au	23	.40	1	3	Mr	28	.78	5	Ap	27	.31	6	My	26	.84
4168	1124	989	24M .0763	23.6046	7.619	1067	2	2	Ap	16	.68	4	My	16	.21	5	Je	14	.74	7	Jl	14	.27	1	Au	12	.80	2	2	Ap	16	.68	4	My	16	.21	5	Je	14	.74
4169	1125	990	23M .3350	12.7129	3.776	1068	3	7	Ap	5	.05	1	My	4	.58	3	Je	3	.11	4	Jl	2	.																	

Asvina			Kartika			Margasira			Pausha			A.D.	Magha			A.D.	Phalguna			Chaitra			
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
S	20	.75	7 O	20	.28	1 N	18	.81	3 D	18	.34	40	4 Jr	16	.87		6 F	15	.40	7 Mr	15	.93	
S	9	.12	4 O	8	.65	6 N	7	.18	7 D	6	.71	41	2 Jr	50	.24		3 F	3	.77	5 Mr	5	.30	
An	29	.48	2 S	28	.01	3 O	27	.55	5 N	26	.08		6 D	25	.61	42	1 Jr	24	.14	2 F	22	.67	
S	17	.38	7 O	16	.91	2 N	15	.44	3 D	14	.97	43	5 Jr	13	.50		7 F	12	.03	1 Mr	13	.57	
S	6	.75	5 O	6	.28	6 N	4	.81	1 D	4	.34	44	2 Jr	2	.87		4 F	1	.40	5 Mr	1	.93	
S	24	.65	4 O	24	.18	5 N	22	.71	7 D	22	.24	45	1 Jr	20	.77		3 F	19	.30	4 Mr	20	.88	
S	14	.01	1 O	13	.54	3 N	12	.07	4 D	11	.61	46	6 Jr	10	.14		7 F	8	.67	2 Mr	10	.20	
S	3	.38	5 O	2	.91	7 N	1	.44	1 N	30	.97		3 D	30	.50	47	5 Jr	29	.03	6 F	27	.56	
S	22	.28	4 O	21	.81	6 N	20	.34	7 D	19	.87	48	2 Jr	18	.40		3 F	16	.93	5 Mr	17	.46	
S	10	.65	2 O	10	.18	3 N	8	.79	5 D	8	.24	49	6 Jr	6	.77		1 F	5	.30	2 Mr	6	.83	
An	31	.01	6 S	29	.54	1 O	29	.07	2 N	27	.60		4 D	27	.13	50	5 Jr	25	.67	7 F	24	.20	
S	18	.91	5 O	18	.44	6 N	16	.97	1 D	16	.50	51	3 Jr	15	.03		4 F	13	.56	6 Mr	15	.09	
S	8	.28	2 O	7	.81	4 N	6	.34	5 D	5	.87	52	7 Jr	4	.40		1 F	2	.93	3 Mr	3	.46	
An	27	.64	1 O	25	.71	3 N	24	.24	Pausha Kshaya				4 D	23	.77	53	6 Jr	22	.30	}	7 F	20	.83
S	26	.17																	2 Mr	22	.36		
S	15	.54	6 O	15	.07	7 N	13	.60	2 D	13	.13	54	3 Jr	11	.66		5 F	10	.19	6 Mr	11	.73	
S	4	.91	3 O	4	.44	4 N	2	.97	6 D	2	.50	55	1 Jr	1	.03		2 Jr	30	.56	4 Mr	1	.09	
S	23	.81	2 O	23	.34	3 N	21	.87	5 D	21	.40	56	6 Jr	19	.93		1 F	18	.46	2 Mr	18	.99	
S	12	.17	6 O	11	.70	1 N	10	.23	2 D	9	.77	57	4 Jr	8	.30		5 F	6	.83	7 Mr	8	.86	
S	1	.54	4 O	1	.07	5 O	30	.60	7 N	29	.13		1 D	28	.66	58	3 Jr	27	.19	4 F	25	.72	
S	20	.44	2 O	19	.97	4 N	18	.50	6 D	18	.03	59	7 Jr	16	.56		2 F	15	.09	3 Mr	16	.62	
S	9	.81	7 O	9	.34	1 N	7	.87	3 D	7	.40	60	4 Jr	5	.93		6 F	4	.46	7 Mr	4	.99	
An	29	.17	4 S	27	.70	6 O	2	.23	7 N	25	.76		2 D	25	.29	61	3 Jr	23	.83	5 F	22	.36	
S	17	.07	3 O	16	.60	5 N	1	.13	6 D	14	.66	62	1 Jr	13	.19		2 F	11	.72	4 Mr	13	.25	
S	6	.44	7 O	5	.97	2 N	4																

TABLE X-

Kaliyuga	Vikrama Era	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom col. 6 + 29°53059					☉'s Anom col. 7 + 1°976					+ 59°06117					+ 88°59176					+ 118°12236																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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									Vaisakha					Jyeshtha					Ashada					Shravana					Bhadrapada																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
									Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
4178	1134	999	23M	·6638	3·2794	2·674	1077	1	1	Mr	26	·94	{ 3 Ap 25	·47	6 Je 23	·53	1 Jl 23	·06	2 Au 21	·94	{ 5 My 25	·00	3 Je 12	·90	5 Jl 12	·43	6 Au 10	·94	{ 6 My 3	·74	1 Je 2	·27	2 Jl 1	·80	4 Jl 31	·94	{ 7 Je 21	·64	7 Je 20	·17	1 Jl 19	·70	3 Au 18	·94	{ 8 My 11	·00	4 Je 9	·53	6 Jl 9	·06	7 Au 7	·94	{ 9 Ap 30	·37	1 My 29	·90	3 Je 28	·43	{ 4 Jl 27	·90	3 Je 28	·43	{ 5 Ap 26	·59	5 Jl 24	·59	7 Au 23	·94	{ 6 My 19	·27	7 Je 17	·80	2 Jl 17	·33	3 Au 15	·94	{ 7 Ap 8	·10	3 My 7	·63	5 Je 6	·16	6 Jl 5	·70	1 Au 24	·94	{ 8 Mr 28	·47	1 Ap 27	·00	{ 2 My 26	·53	5 Jl 24	·59	7 Au 23	·94	{ 3 Je 14	·43	2 Jl 13	·96	4 Au 12	·94	{ 4 My 5	·27	5 Je 3	·80	7 Jl 3	·33	1 Au 1	·94	{ 5 Ap 23	·63	4 Je 21	·69	6 Jl 21	·22	7 Au 19	·94	{ 6 My 12	·53	2 Je 11	·06	3 Jl 10	·59	5 Au 9	·94	{ 7 My 1	·90	6 My 31	·43	7 Je 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96	2 Jl 29	·96

Irya Siddhanta.

+ 147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·30588	{ +324·83647 +354·36705 + 21·736 + 23·712		
+ 9·880	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760			
Asvina	Kartika	Margasira	Pausa	A.D.	Magha	A.D.	Phalguna	Chaitra
Month Day Fraction Week-day	Month Day Fraction Week-day	Month Day Fraction Week-day	Month Day Fraction Week-day	Month Day Fraction Week-day	Month Day Fraction Week-day	Month Day Fraction Week-day	Month Day Fraction Week-day	Month Day Fraction Week-day
S 20 ·13	5 O 19 ·66	7 N 18 ·19	1 D 17 ·72	78	3 Jr 16○ ·25		4 F 14 ·78	6 Mr 16 ·31
S 9 ·49	3 O 9 ·02	4 N 7 ·55	6 D 7 ·08	79	7 Jr 5○ ·61		2 F 4 ·15	3 Mr 5 ·68
Au 29 ·86	7 S 28 ·39	1 O 27 ·92	3 N 26 ·45		4 D 25● ·98	80	6 Jr 24 ·51	1 F 23 ·04
S 16 ·76	6 O 16 ·29	7 N 14○ ·82	2 D 14● ·35	81	3 Jr 12 ·88		5 F 11 ·41	6 Mr 12 ·94
S 6 ·12	3 O 5 ·66	5 N 4○ ·19	6 D 3● ·72	82	1 Jr 2 ·25		2 Jr 31 ·78	4 Mr 2 ·31
S 25 ·02	2 O 24○ ·55	4 N 23 ·08	5 D 22 ·61	83	7 Jr 21 ·14		1 F 19 ·68	3 Mr 21 ·21
S 14 ·39	6 O 13● ·92	1 N 12 ·45	2 D 11 ·98	84	4 Jr 10 ·51		6 F 9 ·04	7 Mr 9○ ·57
S 2○ ·76	4 O 2 ·29	5 O 31 ·82	7 N 30 ·35		1 D 29 ·88	85	3 Jr 82 ·41	4 F 26○ ·94
S 21 ·65	3 O 21 ·18	4 N 19 ·72	6 D 19 ·25	86	7 Jr 17 ·78		2 F 16○ ·31	3 Mr 17 ·84
S 11 ·92	7 O 10 ·55	2 N 9 ·08	3 D 8 ·61	87	5 Jr 7 ·14		6 F 5● ·67	1 Mr 7 ·20
Au 31 ·39	4 S 29 ·92	6 O 29 ·45	7 N 27 ·98		2 D 27○ ·51	88	4 Jr 26 ·04	5 F 24 ·57
S 18 ·29	3 O 17 ·82	5 N 16 ·35	6 D 15○ ·88	89	1 Jr 14 ·41		2 F 12 ·94	4 Mr 14 ·47
S 7 ·65	1 O 7 ·18	2 N 5 ·71	4 D 5○ ·24	90	5 Jr 3 ·78		7 F 2 ·31	1 Mr 3 ·84
Au 28 ·02	7 O 26 ·08	1 N 24● ·61	3 D 24 ·14	91	4 Jr 22 ·67		6 F 21 ·20	7 Mr 22 ·73
S 26 ·55								
S 15 ·92	4 O 15○ ·45	5 N 13 ·98	7 D 13 ·51	92	2 Jr 12 ·04		3 F 10 ·57	5 Mr 11 ·10
S 4 ·28	1 O 3○ ·82	3 N 2 ·35	4 D 1 ·88		6 D 31 ·41	93	7 Jr 29 ·94	2 F 28 ·47
S 23●○ ·18	7 O 24 ·71	2 N 21 ·24	3 D 20 ·77	94	5 Jr 19 ·30		6 F 17 ·84	1 Mr 19● ·37
S 12 ·55	5 O 12 ·08	6 N 10 ·61	1 D 10 ·14	95	2 Jr 8 ·67		4 F 7○ ·20	5 Mr 8 ·73
S 1 ·92	2 O 1 ·45	3 O 30 ·98	5 N 29 ·51		7 D 29 ·04	96	1 Jr 27○ ·57	3 F 26 ·10
S 19 ·81	1 O 19 ·34	2 N 17 ·88	4 D 17 ·41	97	5 Jr 15●○ ·94		7 F 14 ·47	2 Mr 16 ·00
S 9 ·18	5 O 8 ·71	7 N 7 ·24	1 D 6 ·77	98	3 Jr 5● ·30		4 F 3 ·83	6 Mr 5 ·36
Au 29 ·55	3 S 28 ·08	4 O 27 ·61	6 N 26○ ·14		7 D 25 ·67	99	2 Jr 24 ·20	3 F 22 ·73
S 17 ·45	1 O 16 ·98	3 N 15○ ·51	5 D 15 ·04	11	6 Jr 13 ·57	00	1 F 12 ·10	2 Mr 12 ·63
S 5 ·81	6 O 5 ·34	7 N 3○ ·87	2 D 3 ·40	01	3 Jr 1 ·94		5 Jr 31 ·47	7 Mr 2 ·00
S 24 ·71	5 O 24● ·24	6 N 22 ·77	1 D 22 ·30	02	2 Jr 20 ·83		4 F 19 ·36	5 Mr 20○ ·89
S 14○ ·08	2 O 13 ·61	4 N 12 ·14	5 D 11 ·67	03	7 Jr 10 ·20		1 F 8 ·73	3 Mr 10●○ ·26
S 3○ ·44	6 O 2 ·98	1 N 1 ·51	3 D 1 ·04		4 D 30 ·57	04	6 Jr 29 ·10	7 F 27○ ·63
S 21 ·34	5 O 20 ·87	7 N 19 ·40	1 D 18 ·93	05	3 Jr 17 ·46		5 F 16 ·00	6 Mr 17 ·56
S 10 ·71	3 O 10 ·24	4 N 8 ·77	6 D 8 ·30	06	7 Jr 6○ ·83		2 F 5 ·36	3 Mr 6 ·89
Au 31 ·08	7 S 29 ·61	2 O 29 ·14	3 N 27 ·67		5 D 27●○ ·20	07	6 Jr 25 ·73	1 F 24 ·26
S 18 ·97	6 O 18 ·50	1 N 17 ·04	2 D 16●○ ·56	08	4 Jr 15 ·10		5 F 13 ·63	7 Mr 14 ·16
S 7 ·34	3 O 6 ·87	5 N 5 ·40	6 D 4 ·93	09	1 Jr 3 ·46		2 F 1 ·99	4 Mr 3 ·52
Au 27 ·71	2 O 25○ ·77	4 N 24● ·30	5 D 23 ·83	10	7 Jr 22 ·36		1 F 20 ·89	3 Mr 22 ·42
S 26 ·24								
S 15 ·61	7 O 15●○ ·14	1 N 13 ·67	3 D 13 ·20	11	4 Jr 11 ·73		6 F 10 ·26	7 Mr 11 ·79
S 4 ·97	4 O 4○ ·50	6 N 3 ·03	7 D 2 ·56	12	2 Jr 1 ·10		3 Jr 30 ·63	5 F 29 ·16
S 22 ·87	3 O 22 ·40	4 N 20 ·93	6 D 20 ·46	13	7 Jr 18 ·99		2 F 17○ ·52	4 Mr 19● ·05
S 12 ·24	7 O 11 ·77	2 N 10 ·30	3 D 9 ·83	14	5 Jr 8 ·36		6 F 6○ ·89	1 Mr 8 ·42
S 1 ·60	5 O 1 ·14	6 O 30 ·67	1 N 29 ·20		2 D 28 ·73	15	4 Jr 27○ ·26	5 F 25 ·79
S 20 ·50	4 O 20 ·03	5 N 18 ·56	7 D 18 ·09	16	1 Jr 16 ·62		3 F 15 ·16	4 Mr 15 ·69

TABLE X

[illegible]

Surya Siddhanta

+ 147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77429	+ 295·30588	{ + 324·83647 + 354·36705 { + 21·736 + 23·712		
+ 9·880	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760			
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction
S 8 ·87 1 O 8 ·40	2 N 6 ·93 4 D 6 O ·46	17 5 Jr 4 ·99	18 7 F 3 ·52	2 Mr 5 ·05				
Au 29 ·24 5 S 27 ·77	7 O 27 ·30 1 N 25 O ·83	3 D 25 ·36	4 Jr 23 ·89	6 F 22 ·42				
S 17 ·13 4 O 16 ·66	6 N 15 ● ·20 7 D 14 ·73	19 2 Jr 13 ·26	3 F 11 ·79	5 Mr 13 ·32				
S 6 ·50 2 O 6 ·03	3 N 4 ·56 5 D 4 ·09	20 6 Jr 2 ·62	1 F 1 ·15	2 Mr 1 ·68				
S 24 O ·40 7 O 23 ● ·93	2 N 22 ·46 3 D 21 ·99	21 5 Jr 20 ·52	7 F 19 ·05	1 Mr 20 O ·58				
S 13 O ·77 5 O 13 ·30	6 N 11 ·83 1 D 11 ·36	22 2 Jr 9 ·89	4 F 8 ·42	5 Mr 9 ● ·95				
S 3 O ·13 2 O 2 ·66	4 N 1 ·19 5 N 30 ·72	7 D 30 ·26	1 Jr 28 ·79	3 F 27 ·32				
S 22 ·03 1 O 21 ·56	3 N 20 ·09 4 D 19 ·62	24 6 Jr 18 O ·15	7 F 16 ·68	2 Mr 17 ·21				
S 10 ·40 5 O 9 ·93	7 N 8 ·46 1 D 7 ·99	25 3 Jr 6 O ·52	5 F 5 ·05	6 Mr 6 ·58				
Au 30 ·76 3 S 29 ·30	4 O 28 ·83 6 N 27 ·36	7 D 26 O ·89	2 Jr 25 ·42	3 F 23 ·95				
S 18 ·66 2 O 18 ·19	3 N 16 ·72 5 D 16 ·25	27 6 Jr 14 ·78	1 F 13 ·32	2 Mr 14 ·85				
S 8 ·03 6 O 7 ·56	1 N 6 O ·09 2 D 5 ·62	28 4 Jr 4 ·15	5 F 2 ·68	7 Mr 3 ·21				
Au 27 ·40 5 O 25 O ·46	6 N 23 ·99 1 D 23 ·52	29 3 Jr 22 ·05	4 F 20 ·58	6 Mr 22 ·11				
S 25 ·93								
S 15 ·29 2 O 14 ● ·82	4 N 13 ·36 5 D 12 ·89	30 7 Jr 11 ·42	1 F 9 ·95	3 Mr 11 ·48				
S 4 ·66 7 O 4 ● ·19	1 N 2 ·72 3 D 2 ·25	4 D 31 ·78	6 Jr 30 ·31	7 F 28 O ·84				
S 23 ● ·56 6 O 23 ·09	7 N 21 ·62 2 D 21 ·15	32 3 Jr 19 ·68	5 F 18 O ·21	6 Mr 18 ·74				
S 11 ·93 3 O 11 ·46	4 N 9 ·99 6 D 9 ·52	33 1 Jr 8 ·05	2 F 6 O ·58	4 Mr 8 ·11				
S 1 ·29 7 S 30 ·82	2 O 30 ·35 3 N 28 ·88	5 D 28 ·42	6 Jr 26 ● ·95	1 F 25 ·48				
S 20 ·19 6 O 19 ·72	1 N 18 ·25 2 D 17 O ·78	35 4 Jr 16 ● ·31	5 F 14 ·84	7 Mr 16 ·37				
S 9 ·56 4 O 9 ·09	5 N 7 ·62 7 D 7 O ·15	36 1 Jr 5 ·68	3 F 4 ·21	4 Mr 4 ·74				
Au 28 ·92 1 S 27 ·46	2 O 26 ·99 4 N 25 O ·52	6 D 25 ·05	7 Jr 23 ·58	2 F 22 ·11				
S 16 ·82 7 O 16 ·35	1 N 14 ● ·88 3 D 14 ·41	38 4 Jr 12 ·94	6 F 11 ·48	1 Mr 13 ·01				
S 6 ·19 4 O 5 O ·72	6 N 4 ·25 7 D 3 ·78	39 2 Jr 2 ·31	3 Jr 31 ·84	5 Mr 2 ·37				
S 25 O ·09 3 O 24 ·62	5 N 23 ·15 6 D 22 ·68	40 1 Jr 21 ·21	2 F 19 ·74	4 Mr 20 O ·27				
S 13 ● O ·45 7 O 12 ·98	2 N 11 ·52 4 D 11 ·05	41 5 Jr 9 ·58	7 F 8 ·11	1 Mr 9 ● ·64				
S 2 ● ·82 5 O 2 ·35	6 O 31 ·88 1 N 30 ·41	2 D 29 ·94	4 Jr 28 O ·47	6 F 27 ·00				
S 21 ·72 4 O 21 ·25	5 N 19 ·78 7 D 19 ·31	43 1 Jr 17 O ·84	3 F 16 ·37	4 Mr 17 ·90				
S 11 ·09 1 O 10 ·62	3 N 9 ·15 4 D 8 ·68	44 6 Jr 7 O ·21	7 F 5 ·74	2 Mr 6 ·27				
Au 30 ·45 5 S 28 ·98	7 O 28 ·51 2 N 27 ·04	3 D 26 ● ·58	5 Jr 25 ·11	6 F 23 ·64				
S 18 ·35 4 O 17 ·88	6 N 16 O ·41 7 D 15 ·94	46 2 Jr 14 ·47	4 F 13 ·00	5 Mr 14 ·53				
S 7 ·72 2 O 7 ·25	3 N 5 O ·78 5 D 5 ·31	47 6 Jr 3 ·84	1 F 2 ·37	2 Mr 3 ·90				
S 26 ·62 1 O 26 ● O ·15	2 N 24 ·68 4 D 24 ·21	48 5 Jr 22 ·74	7 F 21 ·27	1 Mr 21 ·80				
S 14 ·98 5 O 14 ·51	7 N 13 ·04 1 D 12 ·57	49 3 Jr 11 ·10	4 F 9 ·64	6 Mr 11 O ·17				
S 4 O ·35 2 O 3 ·88	4 N 2 ·41 5 D 1 ·94	7 D 31 ·47	2 Jr 30 ·00	3 F 28 O ·53				
S 23 ·25 1 O 22 ·78	3 N 21 ·31 4 D 20 ·84	51 6 Jr 19 ·37	7 F 17 ● O ·90	2 Mr 19 ·43				
S 12 ·61 6 O 12 ·14	7 N 10 ·68 2 D 10 ·21	52 3 Jr 8 ·74	5 F 7 ● ·27	6 Mr 7 ·80				
Au 31 ·98 3 S 30 ·51	5 O 30 ·04 6 N 28 ·57	1 D 28 O ·10	2 Jr 26 ● ·63	4 F 25 ·16				
S 19 ·88 2 O 19 ·41	3 N 17 ·94 5 D 17 O ·47	54 7 Jr 16 ·00	1 F 14 ·53	3 Mr 16 ·06				
S 9 ·25 6 O 8 ·78	1 N 7 ·31 2 D 6 O ·84	55 4 Jr 5 ·37	5 F 3 ·90	7 Mr 5 ·43				

TABLE X

Kaliyuga	Vikrama Era	Saka Era	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January	Vaisakha				Jyeshtha				Ashada				Shravana				Bhadrapada		
								Week-day				Week-day				Week-day				Week-day				Week-day		
								Month	Day	Fraction		Month	Day	Fraction		Month	Day	Fraction		Month	Day	Fraction		Month	Day	Fraction
4256	1212	1077	24M .8468	10.1137	8.235	1155	7	1	Ap	3	.96	3	My	3	.49	5	Je	2	.02	6	Jl	1	.55	1	Jl	31
4257	1213	1078	24M .1056	28.7526	6.368	1156	1	7	Ap	21	.86	2	My	21	.39	3	Je	19	.92	5	Jl	19	.45	6	Au	17
4258	1214	1079	24M .3643	17.8609	2.525	1157	3	5	Ap	11	.22	6	My	10	.76	1	Je	9	.29	2	Jl	8	.82	4	Au	7
4259	1215	1080	24M .6231	6.9692	26.237	1158	4	2	Mr	31	.59	4	Ap	30	.12	5	My	29	.65	7	Je	28	.18	3	Au	26
																				1	Jl	27	.71			
4260	1216	1081	24M .8819	25.6081	24.370	1159	5	1	Ap	19	.49	3	My	19	.02	4	Je	17	.55	6	Jl	17	.08	7	Au	15
4261	1217	1082	24M .1406	14.7164	20.527	1160	6	5	Ap	7	.86	7	My	7	.39	1	Je	5	.92	3	Jl	5	.45	4	Au	30
4262	1218	1083	24M .3994	3.8247	16.685	1161	1	3	Mr	28	.22	4	Ap	26	.75	6	My	26	.28	2	Jl	24	.35	3	Au	22
																				7	Je	24	.82			
4263	1219	1084	24M .6581	22.4636	14.818	1162	2	2	Ap	16	.12	3	My	15	.65	5	Je	14	.18	6	Jl	13	.71	1	Au	12
4264	1220	1085	24M .9169	11.5719	10.975	1163	3	6	Ap	5	.49	1	My	5	.02	2	Je	3	.55	4	Jl	3	.08	5	Au	1
4265	1221	1086	24M .1756	0.6802	7.133	1164	4	3	Mr	24	.86	6	My	22	.92	1	Je	21	.45	2	Jl	20	.98	4	Au	19
																				5	Ap	23	.39			
4266	1222	1087	24M .4344	19.3191	5.266	1165	6	2	Ap	12	.75	4	My	12	.28	5	Je	10	.81	7	Jl	10	.34	1	Au	8
4267	1223	1088	24M .6932	8.4273	1.423	1166	7	7	Ap	2	.12	1	My	1	.65	3	My	31	.18	4	Je	29	.71	6	Jl	29
4268	1224	1089	24M .9519	27.0663	27.111	1167	1	6	Ap	21	.02	7	My	20	.55	2	Je	19	.08	3	Jl	18	.61	5	Au	17
4269	1225	1090	24M .2107	16.1746	23.268	1168	2	3	Ap	9	.38	4	My	8	.92	6	Je	7	.45	7	Jl	6	.98	2	Au	5
4270	1226	1091	24M .4694	5.2829	19.426	1169	4	7	Mr	29	.75	2	Ap	28	.28	3	My	27	.81	5	Je	26	.34	1	Au	24
4271	1227	1092	24M .7282	23.9218	17.559	1170	5	6	Ap	17	.65	1	My	17	.18	2	Je	15	.71	4	Jl	15	.24	5	Au	13
4272	1228	1093	24M .9869	13.0301	13.716	1171	6	4	Ap	7	.02	5	My	6	.55	7	Je	5	.08	1	Jl	4	.61	3	Au	3
4273	1229	1094	24M .2457	2.1384	9.873	1172	7	1	Mr	26	.38	2	Ap	24	.91	5	Je	22	.98	7	Jl	22	.51	2	Au	21
4274	1230	1095	24M .5044	20.7772	8.006	1173	2	7	Ap	14	.28	1	My	13	.81	3	Je	12	.34	4	Jl	11	.87	6	Au	10
4275	1231	1096	24M .7632	9.8855	4.164	1174	3	4	Ap	3	.65	6	My	3	.18	7	Je	1	.71	2	Jl	1	.24	3	Jl	30
4276	1232	1097	24M .0220	28.5244	2.297	1175	4	3	Ap	22	.55	5	My	22	.08	6	Je	20	.61	1	Jl	20	.14	2	Au	18
4277	1233	1098	24M .2807	17.6327	26.008	1176	5	7	Ap	10	.91	2	My	10	.44	3	Je	8	.97	5	Jl	8	.50	7	Au	7
4278	1234	1099	24M .5395	6.7410	22.171	1177	7	5	Mr	31	.28	6	Ap	29	.81	1	My	29	.34	2	Je	27	.87	5	Au	25
4279	1235	1100	24M .7982	25.3799	20.299	1178	1	4	Ap	19	.18	5	My	18	.71	7	Je	17	.24	1	Jl	16	.77	3	Au	15
4280	1236	1101	25M .0570	14.4882	16.457	1179	2	1	Ap	8	.54	3	My	8	.08	4	Je	6	.61	6	Jl	6	.14	7	Au	4
4281	1237	1102	24M .3157	3.5965	12.614	1180	3	5	Mr	27	.91	7	Ap	26	.44	1	My	25	.97	5	Jl	24	.03	6	Au	22
4282	1238	1103	24M .5745	22.2354	10.747	1181	5	4	Ap	15	.81	6	My	15	.34	7	Je	13	.87	2	Jl	13	.40	3	Au	11
4283	1239	1104	24M .8333	11.3437	6.904	1182	6	2	Ap	5	.18	3	My	4	.71	5	Je	3	.24	6	Jl	2	.77	1	Au	1
4284	1240	1105	25M .0920	0.4520	3.062	1183	7	6	Mr	25	.54	2	My	23	.60	4	Je	22	.14	5	Jl	21	.67	7	Au	20
4285	1241	1106	24M .3508	19.0909	1.195	1184	1	5	Ap	12	.44	6	My	11	.97	1	Je	10	.50	3	Jl	10	.03	4	Au	8
4286	1242	1107	24M .6095	8.1992	24.907	1185	3	2	Ap	1	.81	4	My	1	.34	5	My	30	.87	7	Je	29	.40	1	Jl	28
4287	1243	1108	24M .8683	26.8381	23.040	1186	4	1	Ap	20	.71	3	My	20	.24	4	Je	18	.77	6	Jl	18	.30	7	Au	16
4288	1244	1109	25M .1270	15.9464	19.197	1187	5	6	Ap	10	.07	7	My	9	.60	2	Je	8	.13	3	Jl	7	.66	5	Au	6
4289	1245	1110	24M .3858	5.0547	15.354	1188	6	3	Mr	29	.44	4	Ap	27	.97	6	My	27	.50	1	Je	26	.03	4	Au	24
4290	1246	1111	24M .6445	23.6936	13.488	1189	1	2	Ap	17	.34	3	My	16	.87	5	Je	15	.40	6	Jl	14	.93	1	Au	13
4291	1247	1112	24M .9033	12.8019	9.645	1190	2	6	Ap	6	.70	1	My	6	.24	2	Je	4	.77	4	Jl	4	.30	5	Au	2
4292	1248	1113	25M .1621	1.9101	5.802	1191	3	4	Mr	27	.07	5	Ap	25	.60	1	Je	23	.66	3	Jl	23	.19	4	Au	21
4293	1249	1114	24M .4208	20.5490	3.935	1192	4	2	Ap	13	.97	4	My	13	.50	6	Je	12	.03	7	Jl	11	.56	2	Au	10
4294	1250	1115	24M .6796	9.6573	0.093	1193	6	7	Ap	3	.34	1	My	2	.87	3	Je	1	.40	4	Je	30	.93	6	Jl	30

Surya Siddhanta.

+ 147·65293	+ 177·18353	+ 206·71411	+ 236·24470		+ 265·77529		+ 295·30588	{ + 324·83647 + 354·36705 + 21·736 + 23·712
+ 9·880	+ 11·856	+ 13·832	+ 15·808		+ 17·784		+ 19·760	
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction		Week-day Month Day Fraction		Week-day Month Day Fraction	Week-day Month Day Fraction
2 Au 29 ·61	4 S 28 ·14	5 O 27 ·67	7 N 26● ·20		1 D 25 ·74	58	{ 3 Jr 24 ·27 4 F 22 ·80	6 Mr 23 ·33
1 S 16 ·51	3 O 16○ ·04	4 N 14 ·57	6 D 14 ·10	57	7 Jr 12 ·63		2 F 11 ·16	3 Mr 12 ·65
5 S 5 ·88	7 O 5○ ·41	1 N 3 ·94	3 D 3 ·47	58	5 Jr 2 ·00		6 Jr 31 ·53	1 Mr 2 ·06
4 S 24○ ·78	6 O 24 ·31	7 N 22 ·84	2 D 22 ·37	59	3 Jr 20 ·90		5 F 19 ·43	6 Mr 20 ·96
2 S 14 ·14	3 O 13 ·67	5 N 12 ·20	6 D 11 ·73	60	1 Jr 10 ·26		2 F 8○ ·80	4 Mr 9 ·33
3 S 2● ·51	1 O 2 ·04	2 O 31 ·57	4 N 30 ·10		5 D 29 ·63	61	7 Jr 28●○ ·16	1 F 26 ·69
5 S 21 ·41	6 O 20 ·94	1 N 19 ·47	3 D 19 ·00	62	4 Jr 17●○ ·53		6 F 16 ·06	7 Mr 17 ·59
2 S 10 ·77	4 O 10 ·30	5 N 8 ·84	7 D 8 ·37	63	1 Jr 6 ·90		3 F 5 ·43	4 Mr 6 ·96
7 Au 31 ·14	1 S 29 ·67	3 O 29 ·20	4 N 27○ ·73		6 D 27 ·26	64	7 Jr 25 ·79	2 F 24 ·32
5 S 18 ·04	7 O 17 ·57	2 N 16●○ ·10	3 D 15 ·63	65	5 Jr 14 ·16		6 F 12 ·69	1 Mr 14 ·22
3 S 7 ·41	4 O 6 ·94	6 N 5○ ·47	1 D 5 ·00	66	2 Jr 3 ·53		4 F 2 ·06	5 Mr 3 ·59
2 S 26 ·30	3 O 25 ·83	5 N 24 ·36	6 D 23 ·90	67	1 Jr 22 ·43		2 F 20 ·96	4 Mr 22○ ·49
3 S 15○ ·67	1 O 15 ·20	2 N 13 ·73	4 D 13 ·26	68	5 Jr 11 ·79		7 F 10 ·32	1 Mr 10○ ·85
5 S 4●○ ·04	5 O 3 ·57	7 N 2 ·10	1 D 1 ·63		3 D 31 ·16	69	4 Jr 29 ·69	6 F 28○ ·22
2 S 22 ·93	4 O 22 ·47	6 N 21 ·00	7 D 20 ·53	70	2 Jr 19 ·06		3 F 17 ·59	5 Mr 19 ·12
5 S 12 ·30	1 O 11 ·83	3 N 10 ·36	4 D 9 ·89	71	6 Jr 8○ ·42		7 F 6 ·96	2 Mr 8 ·49
3 S 1 ·67	6 O 1 ·20	7 O 30 ·73	2 N 29 ·26		3 D 28○ ·79	72	5 Jr 27● ·32	6 F 25 ·85
5 S 19 ·57	5 O 19 ·10	6 N 17 ·63	1 D 17○ ·16	73	2 Jr 15 ·69		4 F 14 ·22	5 Mr 15 ·75
3 S 8 ·93	2 O 8 ·46	4 N 7 ·00	5 D 6 ·53	74	7 Jr 5 ·06		1 F 3 ·59	3 Mr 5 ·12
Au 29 ·30	6 S 27 ·83	1 O 27○ ·36	2 N 25● ·89		4 D 25 ·42	75	5 Jr 23 ·95	{ 7 F 22 ·48 2 Mr 24 ·01
5 S 17 ·20	5 O 16○ ·73	7 N 15 ·26	1 D 14 ·79	76	3 Jr 13 ·32		4 F 11 ·85	6 Mr 12 ·38
3 S 5 ·57	3 O 5○ ·10	4 N 3 ·63	6 D 3 ·16	77	7 Jr 1 ·69		2 Jr 31 ·22	3 Mr 1 ·75
5 S 24 ·46	1 O 23 ·99	3 N 22 ·52	5 D 22 ·06	78	6 Jr 20 ·59		1 F 19○ ·12	2 Mr 20● ·65
3 S 13● ·83	6 O 13 ·36	7 N 11 ·89	2 D 11 ·42	79	3 Jr 9 ·95		5 F 8○ ·48	7 Mr 10 ·01
5 S 3 ·20	3 O 2 ·73	5 N 1 ·26	6 N 30 ·79		1 D 30 ·32	80	2 Jr 28○ ·85	4 F 27 ·38
3 S 21 ·10	2 O 20 ·63	4 N 19 ·16	5 D 18 ·69	81	7 Jr 17● ·22		1 F 15 ·75	3 Mr 17 ·28
5 S 10 ·46	6 O 9 ·99	1 N 8 ·52	3 D 8○ ·05	82	4 Jr 6 ·58		6 F 5 ·12	7 Mr 6 ·65
Au 30 ·83	4 S 29 ·36	5 O 28 ·89	7 N 27○ ·42		1 D 26 ·95	83	3 Jr 25 ·48	5 F 24 ·01
3 S 18 ·73	3 O 18 ·26	4 N 16●○ ·79	6 D 16 ·32	84	7 Jr 14 ·85		2 F 13 ·38	3 Mr 13 ·91
5 S 7 ·09	7 O 6 ·62	2 N 5 ·16	3 D 4 ·69	85	5 Jr 3 ·22		6 F 1 ·75	1 Mr 3 ·28
3 S 25○ ·99	6 O 25● ·52	1 N 24 ·05	2 D 23 ·58	86	4 Jr 22 ·11		5 F 20 ·64	7 Mr 22○ ·18
5 S 15○ ·36	4 O 14 ·89	5 N 13 ·42	6 D 12 ·95	87	1 Jr 11 ·46		3 F 10 ·01	4 Mr 11○ ·54
3 S 4●○ ·73	1 O 4 ·26	2 N 2 ·79	4 D 2 ·32		5 D 31 ·85	88	7 Jr 30 ·38	1 F 28● ·91
5 S 22 ·62	7 O 22 ·15	1 N 20 ·68	3 D 20 ·22	89	4 Jr 18○ ·75		6 F 17● ·28	7 Mr 18 ·81
3 S 11 ·99	4 O 11 ·52	6 N 10 ·05	7 D 9 ·58	90	2 Jr 8○ ·11		3 F 6 ·64	5 Mr 8 ·17
5 S 1 ·36	1 S 30 ·89	3 O 30 ·42	4 N 28 ·95		6 D 28○ ·48	91	1 Jr 27 ·01	2 F 25 ·54
3 S 20 ·26	7 O 19 ·79	2 N 18 ·32	3 D 17● ·85	92	5 Jr 16 ·38		6 F 14 ·91	1 Mr 15 ·44
5 S 8 ·62	5 O 8 ·15	6 N 6○ ·68	1 D 6 ·21	93	2 Jr 4 ·74		4 F 3 ·28	5 Mr 4 ·81
Au 28 ·99	4 O 27○ ·05	5 N 25 ·58			7 D 25 ·11	94	1 Jr 23 ·64	{ 3 F 22 ·17 4 Mr 23 ·70
S 27 ·52			Pausha Kshaya					

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and Day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	☉'s Anom col. 6 + 29·53059					☉'s Anom col. 7 + 1·976					☉'s Anom col. 8 + 59·06117					☉'s Anom col. 9 + 88·59176					☉'s Anom col. 10 + 118·1223									
							A.D.					Vaisakha					Jyeshtha					Ashada					Sravana					Bhadrapada				
							Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction						
4295	1251	1116	24M	·9383	28·2962	25·780	1194	7	6	Ap	22○	·23	7	My	21	·76	2	Je	20	·30	3	Jl	19	·83	5	Au	18	·3								
4296	1252	1117	25M	·1971	17·4045	21·938	1195	1	3	Ap	11●	·60	5	My	11	·13	6	Je	9	·66	1	Jl	9	·19	2	Au	7	·7								
4297	1253	1118	24M	·4558	6·5128	18·095	1196	2	7	Mr	30	·97	2	Ap	29	·50	4	My	29	·03	5	Je	27	·56	1	Au	25○	·6								
																					7	Jl	27	·09												
4298	1254	1119	24M	·7146	25·1517	16·228	1197	4	6	Ap	18	·87	1	My	18	·40	2	Je	16	·93	4	Jl	16	·46	5	Au	14○	·9								
4299	1255	1120	24M	·9734	14·2600	12·385	1198	5	4	Ap	8	·23	5	My	7	·76	7	Je	6	·29	1	Jl	5	·82	3	Au	4○	·3								
4300	1256	1121	25M	·2321	3·3683	8·543	1199	6	1	Mr	28	·60	3	Ap	27	·13	4	My	26	·66	7	Jl	24	·72	2	Au	23	·2								
																			6	Je	25	·19														
4301	1257	1122	24M	·4909	22·0072	6·676	1200	7	7	Ap	15	·50	2	My	15	·03	3	Je	13○	·56	5	Jl	13	·09	6	Au	11	·6								
4302	1258	1123	24M	·7496	11·1155	2·834	1201	2	4	Ap	4	·86	6	My	4	·40	7	Je	2○	·93	2	Jl	2	·46	3	Jl	31	·9								
4303	1259	1124	25M	·0084	0·2238	26·545	1202	3	2	Mr	25	·23	5	My	23●	·29	6	Je	21	·82	1	Jl	21	·35	2	Au	19	·8								
																					3	Ap	23	·76												
4304	1260	1125	25M	·2671	18·8627	24·679	1203	4	1	Ap	13○	·13	2	My	12	·66	4	Je	11	·19	5	Jl	10	·72	7	Au	9	·2								
4305	1261	1126	24M	·5259	7·9710	20·836	1204	5	5	Ap	1○	·50	7	My	1	·03	1	My	30	·56	3	Je	29	·09	4	Jl	28	·6								
																								6	Au	27	·1									
4306	1262	1127	24M	·7847	26·6099	18·969	1205	7	4	Ap	20	·39	5	My	19	·92	7	Je	18	·46	1	Jl	17	·99	3	Au	16	·5								
4307	1263	1128	25M	·0434	15·7182	15·126	1206	1	1	Ap	9	·76	3	My	9	·29	4	Je	7	·82	6	Jl	7	·35	7	Au	5	·8								
4308	1264	1129	25M	·3022	4·8265	11·284	1207	2	6	Mr	30	·13	7	Ap	28	·66	2	My	28	·19	5	Jl	26○	·25	6	Au	24●	·7								
																								3	Je	26	·72									
4309	1265	1130	24M	·5609	23·4653	9·417	1208	3	5	Ap	17	·03	6	My	16	·56	1	Je	15	·09	2	Jl	14○	·62	4	Au	13	·1								
4310	1266	1131	24M	·8197	12·5736	5·574	1209	5	2	Ap	6	·39	3	My	5	·92	5	Je	4	·45	6	Jl	3○	·93	1	Au	2	·5								
4311	1267	1132	25M	·0784	1·6819	1·731	1210	6	6	Mr	26	·76	1	Ap	25	·29	4	Je	23	·35	5	Jl	22	·88	7	Au	21	·4								
																								2	My	24	·82									
4312	1268	1133	25M	·3372	20·3208	27·419	1211	7	5	Ap	14	·66	7	My	14○	·19	1	Je	12	·72	3	Jl	12	·25	4	Au	10	·7								
4313	1269	1134	24M	·5959	9·4291	23·577	1212	1	3	Ap	3	·02	4	My	2○	·56	6	Je	1	·09	7	Je	30	·62	2	Jl	30	·1								
4314	1270	1135	24M	·8547	28·0680	21·710	1213	3	1	Ap	21●	·92	3	My	21	·45	4	Je	19	·98	6	Jl	19	·51	1	Au	18	·0								
4315	1271	1136	25M	·1135	17·1763	17·867	1214	4	6	Ap	11	·29	7	My	10	·82	2	Je	9	·35	3	Jl	8	·88	5	Au	7	·4								
4316	1272	1137	25M	·3722	6·2846	14·024	1215	5	3	Mr	31	·66	5	Ap	30	·19	6	My	29	·72	1	Je	28	·25	4	Au	26○	·3								
																								2	Jl	27	·78									
4317	1273	1138	24M	·6310	24·9235	12·158	1216	6	2	Ap	18	·55	4	My	18	·08	5	Je	16	·62	7	Jl	16	·15	1	Au	14○	·6								
4318	1274	1139	24M	·8897	14·0318	8·315	1217	1	6	Ap	7	·92	1	My	7	·45	2	Je	5	·98	4	Jl	5	·51	6	Au	4●	·0								
4319	1275	1140	25M	·1485	3·1401	4·472	1218	2	4	Mr	28	·29	5	Ap	26	·82	1	Je	24○	·88	3	Jl	24●	·41	4	Au	22	·9								
																								7	My	26	·35									
4320	1276	1141	25M	·4072	21·7790	2·605	1219	3	3	Ap	16	·19	4	My	15	·72	6	Je	14○	·25	7	Jl	13	·78	2	Au	12	·3								
4321	1277	1142	24M	·6660	10·8873	26·317	1220	4	7	Ap	4	·55	2	My	4	·08	3	Je	2●	·61	5	Jl	2	·14	6	Jl	31	·6								
4322	1278	1143	24M	·9248	29·5262	24·450	1221	6	4	Mr	24	·92	7	My	22●	·98	2	Je	21	·51	4	Jl	21	·04	5	Au	19	·5								
																								6	Ap	23	·45									
4323	1279	1144	25M	·1835	18·6345	20·608	1222	7	3	Ap	12○	·82	5	My	12	·35	6	Je	10	·88	1	Jl	10	·41	2	Au	8	·9								
4324	1280	1145	25M	·4423	7·7428	16·765	1223	1	1	Ap	2○	·18	2	My	1	·72	4	My	31	·25	5	Je	29	·78	7	Jl	29	·3								
																								1	Au	27	·8									
4325	1281	1146	24M	·7010	26·3817	14·898	1224	2	7	Ap	20	·08	1	My	19	·61	3	Je	18	·14	4	Jl	17	·67	6	Au	16	·2								
4326	1282	1147	24M	·9598	15·4900	11·055	1225	4	4	Ap	9	·45	5	My	8	·98	7	Je	7	·51	2	Jl	7	·04	3	Au	5○	·5								
4327	1283	1148	25M	·2185	4·5982	7·213	1226	5	1	Mr	29	·82	3	Ap	28	·35	4	My	27	·88	7	Jl	25○	·94	2	Au	24	·4								
																								6	Je	26	·41									
4328	1284	1149	25M	·4773	23·2371	5·346	1227	6	7	Ap	17	·71	2	My	17	·24	3	Je	15	·78	5	Jl	15○	·31	6	Au	13	·8								
4329	1285	1150	24M	·7361	12·3454	1·503	1228	7	5	Ap	6	·08	6	My	5	·61	1	Je	4	·14	2	Jl	3●	·67	4	Au	2	·2								
4330	1286	1151	24M	·9948	1·4537	25·215	1229	2	2	Mr	26	·45	3	Ap	24	·98	7	Je	23	·04	1	Jl	22	·57	3	Au	21	·1								
																								5	My	24○	·51									
4331	1287	1152	25M	·2536	20·0926	23·348	1230	3	1	Ap	14	·35	2	My	13○	·88	4	Je	12	·41	5	Jl	11	·94	7	Au	10	·3								
4332	1288	1153	25M	·5123	9·2009	19·506	1231	4	5	Ap	3	·71	7	My	3	·24	1	Je	1	·77	3	Jl	1	·30	4	Jl	30	·8								
4333	1289	1154	24M	·7711	27·8398	17·639	1232	5																												

Sya Siddhanta.

- 147·65293				+ 177·18353				+ 206·71411				+ 236·24470				+ 265·77529				+ 295·30588				{ + 324·83647 + 354·86705 + 21·736 + 23·712			
- 9·880				+ 11·856				+ 13·832				+ 15·808				+ 17·784				+ 19·760							
Asvina				Kartika				Margasira				Pausha				A.D. Magha				A.D. Phalguna				Chaitra			
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day
S	16	·89	1 O	16	○	·42	2 N	14	·95	4 D	14	·48	95	6 Jr	13	·00			7 F	11	·54	2 Mr	13	·07			
S	6	·25	5 O	5	●	·78	7 N	4	·32	1 D	3	·85	96	3 Jr	2	·38			4 Jr	31	·91	6 Mr	1○	·44			
S	24	·15	4 O	23		·68	6 N	22	·21	7 D	21	·74	97	2 Jr	20	·27			3 F	18○	·80	5 Mr	20	·34			
S	13●	·52	2 O	13		·05	3 N	11	·58	5 D	11	·11	98	6 Jr	9	·64			1 F	8●○	·17	2 Mr	9	·70			
S	2	·89	6 O	2		·42	7 O	31	·95	2 N	30	·48		4 D	30	·01	99		5 Jr	28●	·54	7 F	27	·07			
S	21	·78	5 O	21		·31	6 N	19	·84	1 D	19○	·38	12	2 Jr	17	·91	00		4 F	16	·44	5 Mr	16	·97			
S	10	·15	2 O	9		·68	4 N	8	·21	5 D	7○	·74	01	7 Jr	6	·27			1 F	4	·80	3 Mr	6	·33			
Au	30	·52	7 S	29		·05	1 O	28	·58	3 N	27●○	·11		4 D	26	·64	02		6 Jr	25	·17	7 F	23	·70			
S	18	·42	5 O	17		·95	7 N	16●	·48	2 D	16	·01	03	3 Jr	14	·54			5 F	13	·07	6 Mr	14	·60			
S	7	·78	3 O	7○		·31	4 N	5	·84	6 D	5	·37	04	7 Jr	3	·90			2 F	2	·44	3 Mr	2	·97			
S	25○	·68	2 O	25		·21	3 N	23	·74	5 D	23	·27	05	6 Jr	21	·80			1 F	20	·33	2 Mr	21●○	·86			
S	15○	·05	6 O	14		·58	1 N	13	·11	2 D	12	·64	06	4 Jr	11	·17			5 F	9	·70	7 Mr	11●	·23			
S	4●	·41	3 O	3		·94	5 N	2	·48	7 D	2	·01		1 D	31	·54	07		3 Jr	30○	·07	4 F	28●	·60			
S	23	·31	2 O	22		·84	4 N	21	·37	5 D	20	·90	08	7 Jr	19○	·43			1 F	17	·96	3 Mr	18	·50			
S	11	·68	6 O	11		·21	1 N	9	·74	3 D	9	·27	09	4 Jr	7○	·80			6 F	6	·33	7 Mr	7	·86			
S	1	·05	4 S	30		·58	6 O	30	·11	7 N	28	·64		2 D	28	·17	10		3 Jr	26	·70	5 F	25	·23			
S	19	·94	3 O	19		·47	5 N	18○	·00	6 D	17	·54	11	1 Jr	16	·07			2 F	14	·60	4 Mr	16	·13			
S	9	·31	7 O	8		·84	2 N	7○	·37	3 D	6●	·90	12	5 Jr	5	·43			6 F	3	·96	1 Mr	4	·49			
Au	28	·68	6 O	26○		·74	1 N	25	·27	2 D	24	·80	13	4 Jr	23	·33			5 F	21	·86	7 Mr	23	·39			
S	27	·21																									
S	16	·58	4 O	16		·11	5 N	14	·64	7 D	14	·17	14	1 Jr	12	·70			3 F	11	·23	4 Mr	12○	·76			
S	5○	·94	1 O	5●		·47	3 N	4	·00	4 D	3	·53	15	6 Jr	2	·06			7 Jr	31	·60	2 Mr	2○	·13			
S	24	·84	7 O	24		·37	1 N	22	·90	3 D	22	·43	16	4 Jr	20	·96			6 F	19●○	·49	1 Mr	20	·02			
S	13	·21	4 O	12		·74	6 N	11	·27	7 D	10	·80	17	2 Jr	9	·33			3 F	7	·86	5 Mr	9	·39			
S	2	·57	2 O	2		·10	3 O	31	·64	5 N	30	·17		6 D	29○	·70	18		1 Jr	28●	·23	2 F	26	·76			
S	21	·47	1 O	21		·00	2 N	19	·53	4 D	19○	·06	19	5 Jr	17	·59			7 F	16	·12	1 Mr	17	·66			
S	10	·84	5 O	10		·37	6 N	8	·90	1 D	8○	·43	20	2 Jr	6	·96			4 F	5	·49	6 Mr	6	·02			
Au	30	·21	2 S	28		·74	4 O	28	·27	5 N	26	·80		7 D	26	·33	21		1 Jr	24	·86	3 F	23	·39			
S	18	·10	1 O	17○		·63	3 N	16	·16	4 D	15	·70	22	6 Jr	14	·23			7 F	12	·76	2 Mr	14	·29			
S	7	·47	6 O	7○		·00	7 N	5	·53	2 D	5	·06	23	3 Jr	3	·59			5 F	2	·12	6 Mr	3	·65			
S	26●○	·37	4 O	25		·90	6 N	24	·43	7 D	23	·96	24	2 Jr	22	·49			4 F	21	·02	5 Mr	21	·55			
S	14	·74	2 O	14		·27	3 N	12	·80	5 D	12	·33	25	6 Jr	10	·86			1 F	9○	·39	2 Mr	10	·92			
S	4	·10	6 O	3		·63	1 N	2	·16	2 D	1	·69		4 D	31	·22	26		5 Jr	29○	·76	7 F	28●	·29			
S	23	·00	5 O	22		·53	7 N	21	·06	1 D	20	·59	27	3 Jr	19●○	·12			4 F	17	·65	6 Mr	19	·18			
S	12	·37	2 O	11		·90	4 N	10	·43	5 D	9	·96	28	7 Jr	8	·49			2 F	7	·02	3 Mr	7	·55			
Au	31	·73	7 S	30		·26	1 O	29	·80	3 N	28○	·33		4 D	27●	·86	29		6 Jr	26	·39	7 F	24	·92			
S	19	·63	6 O	19		·16	7 N	17○	·69	2 D	17	·22	30	3 Jr	15	·75			5 F	14	·28	6 Mr	15	·81			
S	9	·00	3 O	8		·53	5 N	7○	·06	6 D	6	·59	31	1 Jr	5	·12			2 F	3	·65	4 Mr	5	·18			
Au	29	·37	2 O	27		·43	3 N	25	·96	5 D	25	·49	32	7 Jr	24	·02			1 F	22	·55	3 Mr	23○	·08			
S	27	·90																									
S	16○	·26	6 O	15		·79	1 N	14	·32	2 D	13	·86	33	4 Jr	12	·39			5 F	10	·92	7 Mr	12○	·45			

Kaliyuga.	Vikrama Era.	Saka Era.	Month and day A.D.	Com- mence- ment of Solar Year. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	☉'s Anom col. 6					☉'s Anom col. 7					☉'s Anom col. 8					☉'s Anom col. 9									
								+ 29°53'05.9					+ 1°9'7.6					+ 59°06'11.7					+ 88°59'17.6					+ 118°12'23.3				
								+ 3°9'52					+ 5°9'28					+ 7°9'04														
								Vaisakha					Jyeshtha					Ashada					Sravana					Bhadrapada				
Week-day of 1st January.	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction				
4334	1290	1155	25M	·0298	16·9481	13·796	1233	7	1	Ap	10	·98	3	My	10	·51	5	Je	9	·04	6	Jl	8	·57	1	Au	7	·94				
4335	1291	1156	25M	·2886	6·0564	9·953	1234	1	6	Mr	31	·34	7	Ap	29	·88	2	My	29	·41	3	Je	27	·94	7	Au	26	·00				
4336	1292	1157	25M	·5473	24·6953	8·087	1235	2	5	Ap	19	·24	6	My	18	·77	1	Je	17	·30	2	Jl	16	·83	4	Au	15	·94				
4337	1293	1158	24M	·8061	13·8036	4·244	1236	3	2	Ap	7	·61	4	My	7	·14	5	Je	5	·67	7	Jl	5	·20	1	Au	3	·94				
4338	1294	1159	25M	·0649	2·9119	0·401	1237	5	6	Mr	27	·98	1	Ap	26	·51	4	Je	24	·57	6	Jl	24	·10	7	Au	22	·94				
4339	1295	1160	25M	·3236	21·5508	26·089	1238	6	5	Ap	15	·87	7	My	15	·40	1	Je	13	·94	3	Jl	13	·47	5	Au	12	·94				
4340	1296	1161	25M	·5824	10·6591	22·246	1239	7	3	Ap	5	·24	4	My	4	·77	6	Je	3	·30	7	Jl	2	·83	2	Au	1	·94				
4341	1297	1162	24M	·8411	29·2980	20·379	1240	1	7	Mr	24	·61	3	My	22	·67	5	Je	21	·20	6	Jl	20	·73	1	Au	19	·94				
4342	1298	1163	25M	·0999	18·4063	16·537	1241	3	6	Ap	12	·51	1	My	12	·04	2	Je	10	·57	4	Jl	10	·10	5	Au	8	·94				
4343	1299	1164	25M	·3586	7·5146	12·694	1242	4	3	Ap	1	·87	5	My	1	·40	6	My	30	·93	1	Je	29	·46	3	Jl	29	·94				
4344	1300	1165	25M	·6174	26·1534	10·827	1243	5	2	Ap	20	·77	4	My	20	·30	5	Je	18	·83	7	Jl	18	·36	1	Au	16	·94				
4345	1301	1166	24M	·8762	15·2617	6·984	1244	6	7	Ap	9	·14	1	My	8	·67	3	Je	7	·20	4	Jl	6	·73	6	Au	5	·94				
4346	1302	1167	25M	·1349	4·3700	3·143	1245	1	4	Mr	29	·50	6	Ap	28	·03	7	My	27	·57	3	Jl	25	·63	5	Au	24	·94				
4347	1303	1168	25M	·3937	23·0089	1·275	1246	2	3	Ap	17	·40	4	My	16	·93	6	Je	15	·46	7	Jl	14	·99	2	Au	13	·94				
4348	1304	1169	25M	·6524	12·1172	24·987	1247	3	7	Ap	6	·77	2	My	6	·30	3	Je	4	·83	5	Jl	4	·36	6	Au	2	·94				
4349	1305	1170	24M	·9112	1·2255	21·144	1248	4	5	Mr	26	·14	6	Ap	24	·67	2	Je	22	·73	4	Jl	22	·26	5	Au	20	·94				
4350	1306	1171	25M	·1699	19·8644	19·277	1249	6	4	Ap	14	·03	5	My	13	·56	7	Je	12	·09	1	Jl	11	·63	3	Au	10	·94				
4351	1307	1172	25M	·4287	8·9727	15·434	1250	7	1	Ap	3	·40	2	My	2	·93	4	Je	1	·46	5	Je	30	·99	7	Jl	30	·94				
4352	1308	1173	25M	·6875	27·6117	13·568	1251	1	7	Ap	22	·30	1	My	21	·83	3	Je	20	·36	4	Jl	19	·89	6	Au	18	·94				
4353	1309	1174	24M	·9462	16·7199	9·725	1252	2	4	Ap	10	·67	6	My	10	·20	7	Je	8	·73	2	Jl	8	·26	3	Au	6	·94				
4354	1310	1175	25M	·2050	5·8282	5·883	1253	4	2	Mr	31	·03	3	Ap	29	·56	5	My	29	·09	6	Je	27	·62	2	Au	25	·94				
4355	1311	1176	25M	·4637	24·4671	4·015	1254	5	7	Ap	18	·93	2	My	18	·46	3	Je	16	·99	5	Jl	16	·52	6	Au	14	·94				
4356	1312	1177	25M	·7225	13·5754	0·173	1255	6	5	Ap	8	·30	6	My	7	·83	1	Je	6	·36	2	Jl	5	·89	4	Au	4	·94				
4357	1313	1178	24M	·9812	2·6837	23·885	1256	7	2	Mr	27	·66	4	Ap	26	·19	7	Je	24	·26	1	Jl	23	·79	3	Au	22	·94				
4358	1314	1179	25M	·2400	21·3226	22·018	1257	2	1	Ap	15	·56	3	My	15	·09	4	Je	13	·62	6	Jl	13	·15	7	Au	11	·94				
4359	1315	1180	25M	·4987	10·4309	18·175	1258	3	5	Ap	4	·93	7	My	4	·46	1	Je	2	·99	3	Jl	2	·52	5	Au	1	·94				
4360	1316	1181	25M	·7575	29·0698	16·308	1259	4	4	Ap	23	·83	6	My	23	·36	7	Je	21	·89	2	Jl	21	·42	3	Au	19	·94				
4361	1317	1182	25M	·0163	18·1781	12·466	1260	5	2	Ap	12	·19	3	My	11	·72	5	Je	10	·25	6	Jl	9	·79	1	Au	8	·94				
4362	1318	1183	25M	·2750	7·2864	8·623	1261	7	6	Ap	1	·56	1	My	1	·09	2	My	30	·62	4	Je	29	·15	5	Jl	28	·94				
4363	1319	1184	25M	·5338	25·9252	6·756	1262	1	5	Ap	20	·46	6	My	19	·99	1	Je	18	·52	3	Jl	18	·05	4	Au	16	·94				
4364	1320	1185	25M	·7925	15·0335	2·913	1263	2	2	Ap	9	·83	4	My	9	·36	5	Je	7	·89	7	Jl	7	·42	1	Au	5	·94				
4365	1321	1186	25M	·0513	4·1418	26·625	1264	3	7	Mr	29	·19	1	Ap	27	·72	3	My	27	·25	6	Jl	25	·31	7	Au	23	·94				
4366	1322	1187	25M	·3100	22·7807	24·758	1265	5	6	Ap	17	·09	7	My	16	·62	2	Je	15	·15	3	Jl	14	·68	5	Au	13	·94				
4367	1323	1188	25M	·5688	11·8890	20·916	1266	6	3	Ap	6	·46	4	My	5	·99	6	Je	4	·52	1	Jl	4	·05	2	Au	2	·94				
4368	1324	1189	25M	·8276	0·9973	17·073	1267	7	7	Mr	26	·82	2	Ap	25	·35	5	Je	23	·42	6	Jl	22	·95	1	Au	21	·94				
4369	1325	1190	25M	·0863	19·6362	15·206	1268	1	6	Ap	13	·72	1	My	13	·25	2	Je	11	·78	4	Jl	11	·31	5	Au	9	·94				
4370	1326	1191	25M	·3451	8·7445	11·363	1269	3	4	Ap	3	·08	5	My	2	·62	7	Je	1	·15	1	Je	30	·68	3	Jl	30	·94				
4371	1327	1192	25M	·6038	27·3834	9·497	1270	4	2	Ap	21	·99	4	My	21	·52	6	Je	20	·05	7	Jl	19	·58	2	Au	18	·94				
4372	1328	1193	25M	·8626	16·4917	5·654	1271	5	7	Ap	11	·35	1	My	10	·88	3	Je	9	·41	4	Jl	8	·95	6	Au	7	·94				

Surya Siddhanta.

+ 147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·30588	{ + 324·83647 + 354·36705 + 21·736 + 23·712		
+ 9·880	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760			
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction		Week-day Month Day Fraction		Week-day Month Day Fraction	Week-day Month Day Fraction
2 S 50 ·63	4 O 5● ·16	5 N 3 ·69	7 D 3 ·22	34	1 Jr 1 ·75		3 Jr 31 ·28	4 Mr 10 ·81
1 S 24 ·53	3 O 24 ·06	4 N 22 ·59	6 D 22 ·12	35	7 Jr 20 ·65		2 F 19● ·18	3 Mr 20 ·71
5 S 13 ·90	7 O 13 ·43	1 N 11 ·96	3 D 11 ·49	36	5 Jr 100 ·02		6 F 8 ·55	1 Mr 9 ·08
3 S 2 ·26	4 O 1 ·79	6 O 31 ·32	7 N 29 ·85		2 D 290 ·38	37	3 Jr 27 ·92	5 F 26 ·45
2 S 21 ·16	3 O 20 ·69	5 N 19 ·22	6 D 18● ·75	38	1 Jr 17 ·28		2 F 15 ·81	4 Mr 17 ·34
5 S 10 ·53	1 O 10 ·06	2 N 8 ·59	4 D 8● ·12	39	5 Jr 6 ·65		7 F 5 ·18	1 Mr 6 ·71
3 Au 30 ·89	5 S 29 ·42	6 O 280 ·95	1 N 27● ·49		3 D 27 ·02	40	4 Jr 25 ·55	6 F 24 ·08
2 S 17 ·79	4 O 170 ·32	5 N 15 ·85	7 D 15 ·38	41	1 Jr 13 ·91		3 F 12 ·44	4 Mr 13 ·97
7 S 7 ·16	1 O 6● ·69	3 O 5 ·22	4 D 4 ·75	42	6 Jr 3 ·28		7 F 1 ·81	2 Mr 3 ·34
6 S 26● ·06	7 O 25 ·59	2 N 24 ·12	3 D 23 ·65	43	5 Jr 22 ·18		6 F 200 ·71	1 Mr 22● ·24
3 S 15 ·42	4 O 14 ·95	6 N 13 ·48	1 D 13 ·01	44	2 Jr 11 ·55		4 F 100 ·08	5 Mr 10 ·61
7 S 3 ·79	2 O 3 ·32	3 N 1 ·85	5 D 1 ·38		6 D 30 ·91	45	1 Jr 290 ·44	2 F 27 ·97
6 S 22 69	1 O 22 ·22	2 N 20 ·75	4 D 20 ·28	46	5 Jr 18● ·81		7 F 17 ·34	1 Mr 18 ·87
4 S 12 ·05	5 O 11 ·59	7 N 10 ·12	1 D 90 ·65	47	3 Jr 8 ·18		4 F 6 ·71	6 Mr 8 ·24
1 S 1 ·42	2 S 30 ·95	4 O 30 ·48	6 N 290 ·01		7 D 28 ·54	48	2 Jr 27 ·07	3 F 25 ·61
7 S 19 ·32	1 O 18 ·85	3 N 170 ·38	4 D 16 ·91	49	6 Jr 15 ·44		7 F 13 ·97	2 Mr 15 ·50
4 S 8 ·69	6 O 8 ·22	7 N 6● ·75	2 D 6 ·28	50	3 Jr 4 ·81		5 F 3 ·34	6 Mr 4 ·87
2 Au 29 ·05	5 O 27 ·11	6 N 25 ·65	1 D 25 ·18	51	2 Jr 23 ·71		4 F 22 ·24	5 Mr 230 ·77
3 S 270 ·58								
7 S 160 ·95	2 O 16 ·48	4 N 15 ·01	5 D 14 ·54	52	7 Jr 13 ·07		1 F 11 ·60	3 Mr 120 ·13
5 S 50 ·32	6 O 4 ·85	1 N 3 ·38	2 D 2 ·91	53	4 Jr 1 ·44		6 Jr 31 ·97	7 Mr 1● ·50
4 S 24 ·22	5 O 23 ·75	7 N 22 ·28	1 D 21 ·81	54	3 Jr 200 ·34		4 F 18 ·87	6 Mr 20 ·40
1 S 13 ·58	3 O 13 ·11	4 N 11 ·64	6 D 11 ·17	55	7 Jr 9● ·71		2 F 8 ·24	3 Mr 9 ·77
5 S 2 ·95	7 O 2 ·48	2 N 1 ·01	3 N 30 ·54		5 D 300 ·07	56	6 Jr 28 ·60	1 F 27 ·13
4 S 20 ·85	6 O 20 ·38	7 N 18 ·91	2 D 18 ·44	57	3 Jr 16 ·97		5 F 15 ·50	7 Mr 17 ·03
2 S 10 ·21	3 O 9 ·75	5 N 80 ·28	6 D 7 ·81	58	1 Jr 6 ·34		2 F 4 ·87	4 Mr 6 ·40
3 Au 30 ·58	1 S 29 ·11	4 N 27 ·17			5 D 26 ·70	59	7 Jr 25 ·23	1 F 23 ·77
	2 O 280 ·64						3 Mr 25 ·30	
5 S 18 ·48	7 O 180 ·01	1 N 16 ·54	3 D 16 ·07	60	4 Jr 14 ·60		6 F 13 ·13	7 Mr 13 ·66
2 S 6 ·85	4 O 6● ·38	5 N 4 ·91	7 D 4 ·44	61	2 Jr 3 ·97		3 F 1 ·50	5 Mr 30 ·03
1 S 25● ·74	3 O 25 ·27	4 N 23 ·81	6 D 23 ·34	62	7 Jr 21 ·87		2 F 200 ·40	3 Mr 21 ·93
6 S 15 ·11	7 O 14 ·64	2 N 13 ·17	3 D 12 ·70	63	5 Jr 11 ·23		6 F 90 ·76	1 Mr 11 ·29
3 S 4 ·48	5 O 4 ·01	6 N 2 ·54	1 D 2 ·07		2 D 31 ·60	64	4 Jr 30 ·13	5 F 28 ·66
2 S 22 ·38	3 O 21 ·91	5 N 20 ·44	6 D 190 ·97	65	1 Jr 18● ·50		3 F 17 ·03	4 Mr 18 ·56
3 S 11 ·74	1 O 11 ·27	2 N 9 ·80	4 D 90 ·33	66	5 Jr 7● ·87		7 F 6 ·40	1 Mr 7 ·93
4 S 1 ·11	5 S 30 ·64	7 O 30 ·17	1 N 280 ·70		3 D 28 ·23	67	4 Jr 26 ·76	6 F 25 ·29
3 S 20 ·01	4 O 19 ·54	6 N 18 ·07	7 D 17 ·60	68	2 Jr 16 ·13		3 F 14 ·66	5 Mr 15 ·19
7 S 8 ·37	1 O 70 ·91	3 N 6● ·44	4 D 5 ·97	69	6 Jr 4 ·50		1 F 3 ·03	2 Mr 4 ·56
4 Au 28 ·74	7 O 26 ·80	2 N 25 ·33	3 D 24 ·86	70	5 Jr 23 ·39		6 F 21 ·93	1 Mr 23● ·46
3 S 270 ·27								
3 S 160 ·64	5 O 16 ·17	6 N 14 ·70	1 D 14 ·23	71	2 Jr 12 ·76		4 F 11 ·29	5 Mr 12 ·82
1 S 6● ·01	2 O 5 ·54	4 N 4 ·07	5 D 3 ·60	72	7 Jr 2 ·13		1 Jr 310 ·66	3 Mr 1● ·19

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.			Vaisakha			Jyeshtha			Ashada			Sravana			Bhadrapada						
								Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day			
																											Week-day	Month	Day
4373	1329	1194	25M	·1213	5·6000	1·811	1272	6	4	Mr	30	·72	6	Ap	29	·25	{	7	My	28	·78	3	Jl	26	·84	5	Au	25	●
4374	1330	1195	25M	·3801	24·2389	27·499	1273	1	3	Ap	18	·62	5	My	18	·15	6	Je	16	·68	1	Jl	16	·21	2	Au	14		
4375	1331	1196	25M	·6389	13·3472	23·656	1274	2	7	Ap	7	·99	2	My	7	·52	4	Je	6	·05	5	Jl	5	·58	7	Au	4		
4376	1332	1197	25M	·8976	2·4555	19·814	1275	3	5	Mr	28	·35	{	6	Ap	26	·88	2	Je	24	·94	4	Jl	24	·47	6	Au	23	
4377	1333	1198	25M	·1564	21·0944	17·947	1276	4	4	Ap	15	·25	5	My	14	·78	7	Je	13	·31	1	Jl	12	·84	3	Au	11		
4378	1334	1199	25M	·4151	10·2027	14·104	1277	6	1	Ap	4	·62	3	My	4	·15	4	Je	2	·68	6	Jl	2	·21	7	Jl	31		
4379	1335	1200	25M	·6739	28·8416	12·237	1278	7	7	Ap	23	·51	2	My	23	·05	3	Je	21	·58	5	Jl	21	·11	6	Au	19		
4380	1336	1201	25M	·9336	17·9498	8·395	1279	1	4	Ap	12	·88	6	My	12	·41	7	Je	10	·94	2	Jl	10	·47	4	Au	9		
4381	1337	1202	25M	·1914	7·0581	4·552	1280	2	2	Ap	1	·25	3	Ap	30	·78	5	My	30	·31	6	Je	28	·84	2	Au	26	○	
4382	1338	1203	25M	·4501	25·6970	2·685	1281	4	1	Ap	20	·15	2	My	19	·68	4	Je	18	·21	5	Jl	17	·74	7	Au	16	○	
4383	1339	1204	25M	·7089	14·8053	26·397	1282	5	5	Ap	9	·51	7	My	9	·04	1	Je	7	·57	3	Jl	7	·11	4	Au	5	●	
4384	1340	1205	25M	·9677	3·9136	22·554	1283	6	2	Mr	29	·88	4	Ap	28	·41	{	5	My	27	·94	2	Jl	26	·00	3	Au	24	
4385	1341	1206	25M	·2264	22·5525	20·688	1284	7	1	Ap	16	·78	3	My	16	·31	4	Je	14	·84	6	Jl	14	·37	7	Au	12		
4386	1342	1207	25M	·4852	11·6608	16·845	1285	2	6	Ap	6	·15	7	My	5	·68	2	Je	4	·21	3	Jl	3	·74	5	Au	2		
4387	1343	1208	25M	·7439	0·7691	13·002	1286	3	{	3	Mr	26	·51	6	My	24	·57	1	Je	23	·10	2	Jl	22	·63	4	Au	21	
4388	1344	1209	26M	·0027	19·4080	11·135	1287	4	2	Ap	14	·41	3	My	13	·94	5	Je	12	·47	7	Jl	12	·00	1	Au	10		
4389	1345	1210	25M	·2614	8·5163	7·292	1288	5	6	Ap	2	·78	1	My	2	·31	2	My	31	·84	4	Je	30	·37	{	5	Jl	29	
4390	1346	1211	25M	·5202	27·1552	5·426	1289	7	5	Ap	21	·67	7	My	21	·21	1	Je	19	·74	3	Jl	19	·27	{	4	Au	17	
4391	1347	1212	25M	·7790	16·2635	1·583	1290	1	3	Ap	11	·04	4	My	10	·57	6	Je	9	·10	7	Jl	8	·63	2	Au	7	○	
4392	1348	1213	26M	·0377	5·3718	25·295	1291	2	7	Mr	31	·41	2	Ap	30	·94	{	3	My	29	·47	6	Jl	27	·53	1	Au	26	●
4393	1349	1214	25M	·2965	24·0107	23·428	1292	3	6	Ap	18	·31	7	My	17	·84	2	Je	16	·37	3	Jl	15	·90	5	Au	14		
4394	1350	1215	25M	·5552	13·1190	19·585	1293	5	3	Ap	7	·67	5	My	7	·20	6	Je	5	·73	1	Jl	5	·27	2	Au	3		
4395	1351	1216	25M	·8140	2·2273	15·744	1294	6	1	Mr	28	·04	{	2	Ap	26	·57	5	Je	24	·63	7	Jl	24	·16	1	Au	22	
4396	1352	1217	26M	·0727	20·8662	13·876	1295	7	6	Ap	15	·94	1	My	15	·47	3	Je	14	·00	4	Jl	13	·53	6	Au	12		
4397	1353	1218	25M	·3315	9·9745	10·033	1296	1	4	Ap	4	·31	5	My	3	·84	7	Je	2	·37	1	Jl	1	·90	3	Jl	31		
4398	1354	1219	25M	·5902	28·6133	8·166	1297	3	3	Ap	23	·20	4	My	22	·73	6	Je	21	·26	7	Jl	20	·79	2	Au	19		
4399	1355	1220	25M	·8490	17·7216	4·324	1298	4	7	Ap	12	·57	2	My	12	·10	3	Je	10	·63	5	Jl	10	·16	6	Au	8		
4400	1356	1221	26M	·1078	6·8299	0·481	1299	5	4	Ap	1	·94	6	My	1	·47	1	My	31	·00	{	2	Je	29	·53	5	Au	27	●
4401	1357	1222	25M	·3665	25·4688	26·169	1300	6	3	Ap	19	·83	5	My	19	·37	6	Je	17	·90	1	Jl	17	·43	2	Au	15	●	
4402	1358	1223	25M	·6253	14·5771	22·326	1301	1	1	Ap	9	·20	2	My	8	·73	4	Je	7	·26	5	Jl	6	·79	7	Au	5	●	
4403	1359	1224	25M	·8840	3·6854	18·483	1302	2	5	Mr	29	·57	7	Ap	28	·10	{	1	My	27	·63	4	Jl	25	·69	6	Au	24	
4404	1360	1225	26M	·1428	22·3243	16·616	1303	3	4	Ap	17	·47	6	My	17	·00	7	Je	15	·53	2	Jl	15	·06	3	Au	13		
4405	1361	1226	25M	·4015	11·4326	12·774	1304	4	1	Ap	5	·83	3	My	5	·36	4	Je	3	·90	6	Jl	3	·43	7	Au	1		
4406	1362	1227	25M	·6603	0·5409	8·931	1305	6	{	6	Mr	26	·20	2	My	24	·26	3	Je	22	·79	5	Jl	23	·32	6	Au	20	
4407	1363	1228	25M	·9191	19·1798	7·064	1306	7	5	Ap	14	·10	6	My	13	·63	1	Je	12	·16	2	Jl	11	·69	4	Au	10		
4408	1364	1229	26M	·1778	8·2881	3·221	1307	1	2	Ap	3	·47	4	My	3	·00	5	Je	1	·53	7	Jl	1	·06	{	1	Jl	30	
4409	1365	1230	25M	·4366	26·9270	1·355	1308	2	1	Ap	21	·36	2	My	20	·89	4	Je	19	·43	5	Jl	18	·96	7	Au	17	○	
4410	1366	1231	25M	·6953	16·0353	25·067	1309	4	5	Ap	10	·73	7	My	10	·26	1	Je	8	·79	3	Jl	8	·32	4	Au	6	○	
4411	1367	1232	25M	·9541	5·1436	21·224	1310	5	3	Mr	31	·10	4	Ap	29	·63	{	6	My	29	·16	2	Jl	27	·22	3	Au	25	

Surya Siddhanta.

+ 147.65293	+ 177.18353	+ 206.71411	+ 236.24470	+ 265.77529	+ 295.30588	{ + 324.83647 + 354.36705																
+ 9.880	+ 11.856	+ 13.832	+ 15.808	+ 17.784	+ 19.760	{ + 21.736 + 23.712																
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra														
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction				
S	23	.90	1 O	23	.43	2 N	21	.97	4 D	21	.50	73	6 Jr	20	.03		7 F	18	.56	2 Mr	20	.09
S	13	.27	5 O	12	.80	7 N	11	.33	1 D	10	.86	74	3 Jr	9	.39		4 F	7	.92	6 Mr	9	.45
S	2	.64	3 O	2	.17	4 O	31	.70	6 N	30	.23		7 D	29	.76	75	2 Jr	28	.29	3 F	26	.82
S	21	.54	2 O	21	.07	3 N	19	.60	5 D	19	.13	76	6 Jr	17	.66		1 F	16	.19	2 Mr	16	.72
S	9	.90	6 O	9	.43	7 N	7	.96	2 D	7	.49	77	4 Jr	6	.03		5 F	4	.56	7 Mr	6	.09
Au	30	.27	3 S	28	.80	6 N	26	.86	Pausha Kshaya.				1 D	26	.39	78	2 Jr	24	.92	5 Mr	24	.98
			5 O	28	.33												4 F	23	.45			
S	18	.17	2 O	17	.70	4 N	16	.23	5 D	15	.76	79	7 Jr	14	.29		1 F	12	.82	3 Mr	14	.35
S	7	.53	6 O	7	.07	1 N	5	.60	3 D	5	.13	80	4 Jr	3	.66		6 F	2	.19	7 Mr	2	.72
S	25	.43	5 O	24	.96	7 N	23	.49	2 D	23	.02	81	3 Jr	21	.55		5 F	20	.09	6 Mr	21	.62
S	14	.80	3 O	14	.33	4 N	12	.86	3 D	12	.39	82	7 Jr	10	.92		2 F	9	.45	3 Mr	10	.98
S	4	.17	7 O	3	.70	2 N	2	.23	1 D	1	.76		5 D	31	.29	83	6 Jr	29	.82	1 F	28	.35
S	23	.06	6 O	22	.59	1 N	21	.13	2 D	20	.66	84	4 Jr	19	.19		5 F	17	.72	7 Mr	18	.25
S	11	.43	3 O	10	.96	5 N	9	.49	7 D	9	.02	85	1 Jr	7	.55		3 F	6	.08	4 Mr	7	.61
Au	31	.80	1 S	30	.33	2 O	29	.86	4 N	28	.39		5 D	27	.92	86	7 Jr	26	.45	1 F	24	.98
S	19	.70	7 O	19	.23	1 N	17	.76	3 D	17	.29	87	4 Jr	15	.82		6 F	14	.35	7 Mr	15	.88
S	9	.06	5 O	8	.59	6 N	7	.12	7 D	6	.65	88	2 Jr	5	.19		3 F	3	.72	5 Mr	4	.25
S	26	.96	3 O	26	.49	5 N	25	.02	6 D	24	.55	89	1 Jr	23	.08		2 F	21	.61	4 Mr	23	.14
S	16	.33	7 O	15	.86	2 N	14	.39	3 D	13	.92	90	5 Jr	12	.45		6 F	10	.98	1 M	12	.51
S	5	.69	5 O	5	.23	6 N	3	.76	1 D	3	.29	91	2 Jr	1	.82		4 Jr	31	.35	5 Mr	1	.88
S	24	.59	4 O	24	.12	5 N	22	.65	7 D	22	.18	92	1 Jr	20	.71		3 F	19	.25	4 Mr	19	.78
S	12	.96	1 O	12	.49	3 N	11	.02	4 D	10	.55	93	6 Jr	9	.08		7 F	7	.61	2 Mr	9	.14
S	2	.33	5 O	1	.86	7 O	31	.39	1 N	29	.92		3 D	29	.45	94	4 Jr	27	.98	6 F	26	.51
S	21	.22	4 O	20	.75	6 N	19	.29	7 D	18	.82	95	2 Jr	17	.35		3 F	15	.88	5 Mr	17	.41
S	10	.59	2 O	10	.12	3 N	8	.65	5 D	8	.18	96	6 Jr	6	.71		1 F	5	.24	2 Mr	5	.77
Au	29	.96	6 S	28	.49	1 O	28	.02	Pausha Kshaya.				4 D	26	.08	97	5 Jr	24	.61	1 M	24	.67
						2 N	26	.55									7 F	23	.14			
S	17	.86	5 O	17	.39	6 N	15	.92	1 D	15	.45	98	2 Jr	13	.98		4 F	12	.51	6 Mr	14	.04
S	7	.22	2 O	6	.75	4 N	5	.28	5 D	5	.81	99	7 Jr	3	.35		1 F	1	.88	3 Mr	3	.41
S	26	.12	1 O	25	.65	3 N	24	.18	4 D	23	.71	100	6 Jr	22	.24		7 F	20	.77	2 Mr	21	.30
S	14	.49	6 O	14	.02	7 N	12	.55	2 D	12	.08	01	3 Jr	10	.61		5 F	9	.14	6 Mr	10	.67
S	3	.85	3 O	3	.39	4 N	1	.92	6 D	1	.45		7 D	30	.98	02	2 Jr	29	.51	4 F	28	.04
S	22	.75	2 O	22	.28	3 N	20	.81	5 D	20	.34	03	6 Jr	18	.87		1 F	17	.41	2 Mr	18	.94
S	12	.12	6 O	11	.65	1 N	10	.18	2 D	9	.71	04	4 Jr	8	.24		5 F	6	.77	7 Mr	7	.30
Au	31	.49	4 S	30	.02	5 O	29	.55	7 N	28	.08		1 D	27	.61	05	3 Jr	26	.14	4 F	24	.67
S	19	.38	2 O	18	.92	4 N	17	.45	5 D	16	.98	06	7 Jr	15	.51		2 F	14	.04	3 Mr	15	.57
S	8	.75	7 O	8	.28	1 N	6	.81	3 D	6	.34	07	4 Jr	4	.87		6 F	3	.40	7 Mr	4	.94
S	27	.65	6 O	27	.18	7 N	25	.71	2 D	25	.24	08	3 Jr	23	.77		5 F	22	.30	6 Mr	22	.83
S	16	.02	3 O	15	.55	5 N	14	.08	6 D	13	.61	09	1 Jr	12	.14		2 F	10	.67	4 Mr	12	.20
S	5	.38	7 O	4	.91	2 N	3	.44	3 D	2	.98	10	5 Jr	1	.51		7 Jr	31	.04	1 Mr	1	.57
S	24	.28	6 O	23	.81	1 N	22	.34	2 D	21	.87	11	4 Jr	20	.40		5 F	18	.93	7 Mr	20	.47

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D.	Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	☉'s Anom col. 6					☾'s Anom col. 7					+ 29-53059					+ 59-06117					+ 88-59176					+ 118-1223						
									Vaisakha					Jyeshtha					Ashada					Sravana					Bhadrapada											
									Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction				
4412	1368	1233	26M	·2128	23-7825	19-357	1311	6	2	Ap	19	·00	3	My	18	·53	5	Je	17	·06	6	Jl	16	·59	1	Au	15	·00	3	My	18	·53	5	Je	17	·06	6	Jl	16	·59
4413	1369	1234	25M	·4716	12-8908	15-514	1312	7	6	Ap	7	·36	7	My	6	·89	2	Je	50	·42	3	Jl	4	·96	5	Au	3	·36	7	My	6	·89	2	Je	50	·42	3	Jl	4	·96
4414	1370	1235	25M	·7304	1-9991	11-672	1313	2	3	Mr	27	·73	5	Ap	26	·26	1	Je	24	·32	2	Jl	23	·85	4	Au	22	·73	5	Ap	26	·26	1	Je	24	·32	2	Jl	23	·85
4415	1371	1236	25M	·9892	20-6380	9-805	1314	3	2	Ap	15	·63	4	My	150	·16	5	Je	13	·69	7	Jl	13	·22	1	Au	11	·63	4	My	150	·16	5	Je	13	·69	7	Jl	13	·22
4416	1372	1237	26M	·2479	9-7463	5-962	1315	4	7	Ap	50	·00	1	My	4	·53	3	Je	3	·06	4	Jl	2	·59	6	Au	1	·00	1	My	4	·53	3	Je	3	·06	4	Jl	2	·59
4417	1373	1238	25M	·5066	28-3851	4-095	1316	5	5	Ap	22	·89	7	My	22	·42	1	Je	20	·95	3	Jl	20	·48	5	Au	19	·89	7	My	22	·42	1	Je	20	·95	3	Jl	20	·48
4418	1374	1239	25M	·7654	17-4934	0-254	1317	7	3	Ap	12	·26	4	My	11	·79	6	Je	10	·32	7	Jl	9	·85	2	Au	8	·26	4	My	11	·79	6	Je	10	·32	7	Jl	9	·85
4419	1375	1240	26M	·0241	6-6017	23-964	1318	1	7	Ap	1	·63	2	My	1	·16	3	My	30	·69	5	Je	29	·22	1	Au	27	·63	2	My	1	·16	3	My	30	·69	5	Je	29	·22
4420	1376	1241	26M	·2829	25-2406	22-098	1319	2	6	Ap	20	·53	1	My	20	·06	2	Je	18	·59	4	Jl	180	·12	5	Au	16	·53	1	My	20	·06	2	Je	18	·59	4	Jl	180	·12
4421	1377	1242	25M	·5416	14-3489	18-255	1320	3	3	Ap	8	·89	5	My	8	·42	6	Je	6	·95	1	Jl	60	·48	3	Au	5	·89	5	My	8	·42	6	Je	6	·95	1	Jl	60	·48
4422	1378	1243	25M	·8004	3-4572	14-412	1321	5	1	Mr	29	·26	2	Ap	27	·79	4	My	27	·32	7	Jl	25	·38	1	Au	23	·26	2	Ap	27	·79	4	My	27	·32	7	Jl	25	·38
4423	1379	1244	26M	·0591	22-0961	12-545	1322	6	7	Ap	17	·16	1	My	16	·69	3	Je	15	·22	4	Jl	14	·75	6	Au	13	·16	1	My	16	·69	3	Je	15	·22	4	Jl	14	·75
4424	1380	1245	26M	·3179	11-2044	8-702	1323	7	4	Ap	6	·52	6	My	60	·06	7	Je	4	·59	2	Jl	4	·12	3	Au	2	·52	6	My	60	·06	7	Je	4	·59	2	Jl	4	·12
4425	1381	1246	25M	·5767	0-3127	4-860	1324	1	1	Mr	25	·89	4	My	23	·95	6	Je	22	·48	1	Jl	22	·01	2	Au	20	·89	4	My	23	·95	6	Je	22	·48	1	Jl	22	·01
4426	1382	1247	25M	·8354	18-9516	2-994	1325	3	7	Ap	13	·79	2	My	13	·32	3	Je	11	·85	5	Jl	11	·38	6	Au	9	·79	2	My	13	·32	3	Je	11	·85	5	Jl	11	·38
4427	1383	1248	26M	·0942	8-0599	26-705	1326	4	5	Ap	3	·16	6	My	2	·69	1	Je	1	·22	2	Je	30	·75	4	Jl	30	·16	6	My	2	·69	1	Je	1	·22	2	Je	30	·75
4428	1384	1249	26M	·3528	26-6988	24-838	1327	5	4	Ap	22	·05	5	My	21	·59	7	Je	20	·12	1	Jl	19	·65	3	Au	180	·05	5	My	21	·59	7	Je	20	·12	1	Jl	19	·65
4429	1385	1250	25M	·6117	15-8071	20-995	1328	6	1	Ap	10	·42	2	My	9	·95	4	Je	8	·48	6	Jl	8	·01	7	Au	60	·42	2	My	9	·95	4	Je	8	·48	6	Jl	8	·01
4430	1386	1251	25M	·8705	4-9154	17-153	1329	1	5	Mr	30	·79	7	Ap	29	·32	1	My	28	·85	4	Jl	26	·91	6	Au	25	·79	7	Ap	29	·32	1	My	28	·85	4	Jl	26	·91
4431	1387	1252	26M	·1292	23-5543	15-286	1330	2	4	Ap	18	·69	6	My	18	·22	7	Je	160	·75	2	Jl	16	·28	3	Au	14	·69	6	My	18	·22	7	Je	160	·75	2	Jl	16	·28
4432	1388	1253	26M	·3880	12-6626	11-443	1331	3	2	Ap	8	·05	3	My	7	·58	5	Je	60	·11	6	Jl	5	·65	1	Au	4	·05	3	My	7	·58	5	Je	60	·11	6	Jl	5	·65
4433	1389	1254	25M	·6467	1-7709	7-600	1332	4	6	Mr	27	·42	7	Ap	25	·95	4	Je	24	·01	5	Jl	23	·54	7	Au	22	·42	7	Ap	25	·95	4	Je	24	·01	5	Jl	23	·54
4434	1390	1255	25M	·9055	20-4097	5-734	1333	6	5	Ap	150	·32	6	My	14	·85	1	Je	13	·38	2	Jl	12	·91	4	Au	11	·32	6	My	14	·85	1	Je	13	·38	2	Jl	12	·91
4435	1391	1256	26M	·1642	9-5180	1-891	1334	7	2	Ap	40	·69	4	My	4	·22	5	Je	2	·75	7	Jl	2	·28	1	Jl	31	·69	4	My	4	·22	5	Je	2	·75	7	Jl	2	·28
4436	1392	1257	26M	·4230	28-1569	0-024	1335	1	1	Ap	23	·58	3	My	23	·11	4	Je	21	·64	6	Jl	21	·18	7	Au	19	·58	3	My	23	·11	4	Je	21	·64	6	Jl	21	·18
4437	1393	1258	25M	·6818	17-2652	23-736	1336	2	5	Ap	11	·95	7	My	11	·48	2	Je	10	·01	3	Jl	9	·54	5	Au	8	·95	7	My	11	·48	2	Je	10	·01	3	Jl	9	·54
4438	1394	1259	25M	·9405	6-3735	19-893	1337	4	3	Ap	1	·32	4	Ap	30	·85	6	My	30	·38	7	Je	28	·91	3	Au	26	·32	4	Ap	30	·85	6	My	30	·38	7	Je	28	·91
4439	1395	1260	26M	·1993	25-0124	18-027	1338	5	2	Ap	20	·22	3	My	19	·75	5	Je	18	·28	6	Jl	170	·81	1	Au	16	·22	3	My	19	·75	5	Je	18	·28	6	Jl	170	·81
4440	1396	1261	26M	·4580	14-1207	14-184	1339	6	6																															

Surya Siddhanta.

+ 147·65293	+ 177·18353	+ 206·71411	+ 236·24470	+ 265·77529	+ 295·30588	{ + 324·83647 + 354·36705 + 21·736 + 23·712		
+ 9·880	+ 11·856	+ 13·832	+ 15·808	+ 17·784	+ 19·760			
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction
2 S 13 ·65	4 O 13 ·18	5 N 11 ·71	7 D 11○ ·24	12	1 Jr 9 ·77	13	3 F 8 ·30	4 Mr 8 ·83
7 S 2 ·02	1 O 1 ·55	3 O 31 ·08	4 N 29○ ·61	14	6 D 29 ·14		7 Jr 27 ·67	2 F 26 ·20
5 S 20 ·91	7 O 20 ·44	1 N 18○ ·98	3 D 18 ·51	15	5 Jr 17 ·04		6 F 15 ·57	1 Mr 17 ·10
3 S 10 ·28	4 O 9 ·81	6 N 8 ·34	7 D 7 ·87	16	2 Jr 6 ·40	16	3 F 4 ·93	5 Mr 6 ·46
7 Au 30 ·65	{ 2 S 29○ ·18 3 O 28● ·71	Margasira Kshaya		5 N 27 ·24	6 D 26 ·77		{ 1 Jr 25 ·30 2 F 23 ·83	4 Mr 24○ ·36
6 S 17○ ·55	1 O 17 ·08	2 N 15 ·61	4 D 15 ·14	17	5 Jr 13 ·67		7 F 12 ·20	1 Mr 13○ ·73
3 S 6○ ·91	5 O 6 ·44	6 N 4 ·97	1 D 4 ·50	18	3 Jr 3 ·04	21	4 F 1 ·57	6 Mr 3 ·10
2 S 25● ·81	4 O 25 ·34	5 N 23 ·87	7 D 23 ·40	19	1 Jr 21○ ·93		3 F 20● ·46	5 Mr 22 ·63
7 S 15 ·18	1 O 14 ·71	3 N 13 ·24	4 D 12 ·77	20	6 Jr 11○ ·30		7 F 9● ·83	2 Mr 10 ·36
4 S 3 ·55	6 O 3 ·08	7 N 1 ·61	2 D 1 ·14	22	3 D 30○ ·67	24	5 Jr 29 ·20	6 F 27 ·73
3 S 22 ·44	4 O 21 ·97	6 N 20 ·50	1 D 20 ·04	23	2 Jr 18 ·57		4 F 17 ·10	5 Mr 18 ·63
7 S 11 ·81	2 O 11 ·34	3 N 9 ·87	5 D 9● ·40	24	6 Jr 7 ·93		1 F 6 ·46	2 Mr 7 ·99
5 S 1 ·18	6 S 30 ·71	1 O 30○ ·24	2 N 28 ·77	25	4 D 28 ·30	32	5 Jr 26 ·83	7 F 25 ·36
4 S 19 ·08	5 O 18○ ·61	7 N 17 ·14	1 D 16 ·67	26	3 Jr 15 ·20		4 F 13 ·73	6 Mr 15 ·26
1 S 8 ·44	2 O 7● ·97	4 N 6 ·50	6 D 6 ·03	27	7 Jr 4 ·56		2 F 3 ·10	3 Mr 4○ ·63
7 S 27 ·34	1 O 26 ·87	3 N 25 ·40	4 D 24 ·93	28	6 Jr 23 ·46	35	1 F 22○ ·99	2 Mr 23 ·52
4 S 16 ·71	6 O 16 ·24	7 N 14 ·77	2 D 14 ·30	29	3 Jr 12 ·83		5 F 11○ ·36	6 Mr 11 ·89
2 S 5 ·07	3 O 4 ·61	5 N 3 ·14	6 D 2 ·67	30	1 Jr 1 ·20		2 Jr 30 ·73	4 Mr 1 ·26
7 S 23 ·97	2 O 23 ·50	4 N 22 ·03	5 D 21○ ·56	31	7 Jr 20 ·09	40	1 F 18 ·63	3 Mr 20 ·16
5 S 13 ·34	6 O 12 ·87	1 N 11 ·40	2 D 10○ ·93	32	4 Jr 9 ·46		5 F 7 ·99	7 Mr 9 ·52
2 S 2 ·71	4 O 2 ·24	5 O 31 ·77	7 N 30● ·30	33	1 D 29 ·83		3 Jr 28 ·36	4 F 26 ·89
1 S 20 ·60	3 O 20 ·14	4 N 18 ·67	6 D 18 ·20	34	7 Jr 16 ·73	43	2 F 15 ·26	3 Mr 16 ·79
5 S 9 ·97	7 O 9○ ·50	2 N 8 ·03	3 D 7 ·56	35	5 Jr 6 ·09		6 F 4 ·62	1 Mr 6 ·16
3 Au 30 ·34	6 O 28 ·40	7 N 26 ·93	Pausha Kshaya		2 D 26 ·46		{ 3 Jr 24 ·99 5 F 23 ·52	7 Mr 25●○ ·05
4 S 28○ ·87	3 O 17 ·77	5 N 16 ·30	6 D 15 ·83	36	1 Jr 14 ·36	43	2 F 12 ·89	4 Mr 13 ·42
2 S 18○ ·24	1 O 6 ·13	2 N 4 ·66	4 D 4 ·20	37	5 Jr 2 ·73		7 F 1○ ·26	1 Mr 2● ·79
6 S 6● ·60	7 O 25 ·03	1 N 23 ·56	3 D 23 ·09	38	4 Jr 21○ ·62		6 F 20 ·15	7 Mr 21 ·68
5 S 25 ·50	4 O 14 ·40	5 N 12 ·93	7 D 12 ·46	39	1 Jr 10○ ·99	40	3 F 9 ·52	5 Mr 11 ·05
2 S 14 ·87	1 O 3 ·77	3 N 2 ·30	4 D 1 ·83	40	6 D 31● ·36		7 Jr 29 ·89	2 F 28 ·42
7 S 22 ·13	7 O 21 ·66	2 N 20 ·19	3 D 19 ·73	41	5 Jr 18 ·26		6 F 16 ·79	1 Mr 18 ·32
3 S 11 ·50	5 O 11 ·03	6 N 9○ ·56	7 D 9● ·09	42	2 Jr 7 ·62	43	4 F 6 ·15	5 Mr 7 ·68
7 Au 31 ·87	2 S 30 ·40	3 O 29○ ·93	5 N 28 ·46	43	6 D 27 ·99		1 Jr 26 ·52	3 F 25 ·05
6 S 19 ·77	1 O 19● ·30	2 N 17 ·83	4 D 17 ·36	44	5 Jr 15 ·89		7 F 14 ·42	1 Mr 14 ·95
4 S 8○ ·13	5 O 7● ·66	7 N 6 ·19	1 D 5 ·72	45	3 Jr 4 ·26	43	4 F 2 ·79	6 Mr 4○ ·32
3 S 27● ·03	4 O 26 ·56	6 N 25 ·09	7 D 24 ·62	46	2 Jr 23 ·15		3 F 21●○ ·68	5 Mr 23 ·21
7 S 16 ·40	1 O 15 ·93	3 N 14 ·46	4 D 13 ·99	47	6 Jr 12 ·52		1 F 11● ·05	2 Mr 12 ·58
4 S 5 ·76	6 O 5 ·30	7 N 3 ·83	2 D 3 ·36	48	3 Jr 1○ ·89	43	5 Jr 31 ·42	6 F 29 ·95
3 S 23 ·66	5 O 23 ·19	6 N 21 ·72	1 D 21○ ·25	49	2 Jr 19 ·79		4 F 18 ·32	5 Mr 19 ·85
1 S 13 ·03	2 O 12 ·56	4 N 11 ·09	5 D 10○ ·62	50	7 Jr 9 ·15		1 F 7 ·68	3 Mr 9 ·21

TABLE X—

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom col. 6					☾'s Anom col. 7					☉'s Anom col. 6					☾'s Anom col. 7									
									+ 29·53059					+ 1·976					+ 59·06117					+ 88·59176					+ 118·12235				
									Vaisakha					Jyeshtha					Ashada					Sravana					Bhadrapada				
					Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction					
4451	1407	1272	26M	·3043	12·4344	7·372	1350	6	4	Ap	7	·74	6	My	7	·27	7	Je	50	·81	2	Jl	5	·34	3	Au	3	·87					
4452	1408	1273	26M	·5731	1·5427	3·529	1351	7	{	2	Mr	28	·11	5	My	26	·17	6	Je	24	·70	1	Jl	24	·23	2	Au	22	·76				
										3	Ap	26	·64																				
4453	1409	1274	25M	·8219	20·1815	1·663	1352	1	1	Ap	150	·01	2	My	14	·54	4	Je	13	·07	5	Jl	12	·60	7	Au	11	·13					
4454	1410	1275	26M	·0806	9·2898	25·375	1353	3	5	Ap	40	·38	6	My	3	·91	1	Je	2	·44	2	Jl	1	·97	{	4	Jl	31	·50				
																								6		Au	30	·03					
4455	1411	1276	26M	·3394	27·9287	23·508	1354	4	4	Ap	23	·27	5	My	22	·80	7	Je	21	·33	1	Jl	20	·87	3	Au	19	·40					
4456	1412	1277	26M	·5981	17·0370	19·665	1355	5	1	Ap	12	·64	3	My	12	·17	4	Je	10	·70	6	Jl	10	·23	7	Au	80	·76					
4457	1413	1278	25M	·8565	6·1453	15·823	1356	6	6	Ap	1	·01	7	Ap	30	·54	2	My	30	·07	{	3	Je	28	·60	6	Au	26	·66				
																						5	Jl	280	·13								
4458	1414	1279	26M	·1156	24·7842	13·956	1357	1	4	Ap	19	·91	6	My	19	·44	7	Je	17	·97	2	Jl	170	·50	4	Au	16	·03					
4459	1415	1280	26M	·3744	13·8925	10·113	1358	2	2	Ap	9	·27	3	My	8	·80	5	Je	7	·33	6	Jl	6	·86	1	Au	5	·39					
4460	1416	1281	26M	·6331	3·0008	6·270	1359	3	6	Mr	29	·64	{	1	Ap	28	·17	4	Je	26	·23	5	Jl	25	·76	7	Au	24	·29				
														2	My	270	·70																
4461	1417	1282	25M	·8919	21·6397	4·403	1360	4	5	Ap	16	·54	7	My	160	·07	1	Je	14	·60	3	Jl	14	·13	4	Au	12	·66					
4462	1418	1283	26M	·1507	10·7480	0·561	1361	6	2	Ap	5	·90	4	My	5	·43	5	Je	3	·97	7	Jl	3	·50	2	Au	2	·03					
4463	1419	1284	26M	·4094	29·3869	26·248	1362	7	{	7	Mr	26	·27	3	My	24	·33	4	Je	22	·86	6	Jl	22	·39	7	Au	20	·92				
											1	Ap	24	·80																			
4464	1420	1285	26M	·6682	18·4952	22·406	1363	1	6	Ap	14	·17	7	My	13	·70	2	Je	12	·23	3	Jl	11	·76	5	Au	10	·29					
4465	1421	1286	25M	·9269	7·6035	18·563	1364	2	3	Ap	2	·54	5	My	2	·07	6	My	31	·60	1	Jl	30	·13	{	2	Jl	29	·66				
																								4		Au	280	·19					
4466	1422	1287	26M	·1857	26·2424	16·696	1365	4	2	Ap	21	·43	3	My	20	·96	5	Je	19	·49	7	Jl	19	·03	1	Au	17	·56					
4467	1423	1288	26M	·4444	15·3507	12·853	1366	5	6	Ap	10	·80	1	My	10	·33	2	Je	8	·86	4	Jl	80	·39	5	Au	6	·92					
4468	1424	1289	26M	·7032	4·4590	9·011	1367	6	4	Mr	31	·17	5	Ap	29	·70	{	7	My	29	·23	3	Jl	27	·29	4	Au	25	·82				
																		1	Je	270	·76												
4469	1425	1290	25M	·9620	23·0979	7·144	1368	7	3	Ap	18	·07	4	My	17	·60	6	Je	160	·13	7	Jl	15	·66	2	Au	14	·19					
4470	1426	1291	26M	·2207	12·2062	3·301	1369	2	7	Ap	7	·43	1	My	6	·96	3	Je	5	·49	5	Jl	5	·02	6	Au	3	·55					
4471	1427	1292	26M	·4795	1·3144	27·013	1370	3	{	4	Mr	27	·80	7	My	25	·86	2	Je	24	·39	3	Jl	23	·92	5	Au	22	·45				
											6	Ap	260	·33																			
4472	1428	1293	26M	·7382	19·9533	25·146	1371	4	3	Ap	150	·70	5	My	15	·23	6	Je	13	·76	1	Jl	13	·29	2	Au	11	·82					
4473	1429	1294	25M	·9970	9·0616	21·304	1372	5	1	Ap	4	·06	2	My	3	·59	4	Je	2	·13	5	Jl	1	·66	{	7	Jl	31	·19				
																								1		Au	29	·72					
4474	1430	1295	26M	·2557	27·7005	19·437	1373	7	6	Ap	22	·96	1	My	22	·49	3	Je	21	·02	4	Jl	20	·55	6	Au	19	·08					
4475	1431	1296	26M	·5145	16·8088	15·594	1374	1	4	Ap	12	·33	5	My	11	·86	7	Je	10	·39	1	Jl	9	·92	3	Au	80	·45					
4476	1432	1297	26M	·7733	5·9171	11·751	1375	2	1	Ap	1	·70	3	My	1	·23	4	My	30	·76	{	6	Je	29	·29	2	Au	27	·35				
																						7	Jl	280	·82								
4477	1433	1298	26M	·0323	24·5560	9·885	1376	3	7	Ap	19	·59	2	My	19	·12	3	Je	17	·65	5	Jl	17	·19	6	Au	15	·72					
4478	1434	1299	26M	·2908	13·6643	6·042	1377	5	4	Ap	8	·96	6	My	8	·49	1	Je	70	·02	2	Jl	6	·55	4	Au	5	·08					
4479	1235	1300	26M	·5495	2·7726	2·199	1378	6	2	Mr	29	·33	{	3	Ap	27	·86	6	Je	25	·92	1	Jl	25	·45	2	Au	23	·98				
														5	My	270	·39																
4480	1436	1301	26M	·8083	21·4115	0·332	1379	7	1	Ap	17	·23	2	My	160	·76	4	Je	15	·29	5	Jl	14	·82	7	Au	13	·35					
4481	1437	1302	26M	·0670	10·5198	24·044	1380	1	5	Ap	5	·59	7	My	5	·12	1	Je	3	·65	3	Jl	3	·18	4	Au	1	·71					
4482	1438	1303	26M	·3258	29·1587	22·177	1381	3	{	2	Mr	250	·96	6	My	24	·02	7	Je	22	·55	2	Jl	22	·08	3	Au	20	·61				
											4	Ap	24	·49																			
4483	1439	1304	26M	·5845	18·2670	18·335	1382	4	1	Ap	13	·86	3	My	13	·39	4	Je	11	·92	6	Jl	11	·45	7	Au	9	·98					
4484	1440	1305	26M	·8433	7·3753	14·492	1383	5	6	Ap	3	·22	7	My	2																		

Surya Siddhanta.

+ 147.65293	+ 177.18353	+ 206.71411	+ 236.24470	+ 265.77529	+ 295.30588	+ 324.83647		
+ 9.880	+ 11.856	+ 13.832	+ 15.808	+ 17.784	+ 19.760	+ 354.36705		
						+ 21.736		
						+ 23.712		
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction		Week-day Month Day Fraction		Week-day Month Day Fraction	Week-day Month Day Fraction
5 S 2 .40	6 O 1 .93	1 O 31 .46	2 N 29 .99		4 D 29 .52	51	6 Jr 28 .05	7 F 26 .58
4 S 21 .29	5 O 20 .83	7 N 19 .36	1 D 18 .89	52	3 Jr 17 .42		4 F 15 .95	6 Mr 16 .48
1 S 9 .66	3 O 9 .19	4 N 7 .72	6 D 7 .25	53	7 Jr 5 .78		2 F 4 .31	3 Mr 5 .85
7 S 28 .56	2 O 28 .09	3 N 26 .62	5 D 26 .15	54	6 Jr 24 .68		1 F 23 .21	2 Mr 24 .74
4 S 17 .93	6 O 17 .46	7 N 15 .99	2 D 15 .52	55	4 Jr 14 .05		5 F 12 .58	7 Mr 14 .11
2 S 7 .29	3 O 6 .82	5 N 5 .35	6 D 4 .89	56	1 Jr 3 .42		2 F 1 .95	4 Mr 2 .48
1 S 25 .19	2 O 24 .72	4 N 23 .25	5 D 22 .78	57	7 Jr 21 .31		1 F 19 .84	3 Mr 21 .37
5 S 14 .56	7 O 44 .09	1 N 12 .62	3 D 12 .15	58	4 Jr 10 .68		6 F 9 .21	7 Mr 10 .74
2 S 3 .93	4 O 3 .46	5 N 1 .99	7 D 1 .52		2 D 31 .05	59	3 Jr 29 .58	5 F 28 .11
1 S 22 .83	3 O 22 .35	4 N 20 .88	6 D 20 .41	60	7 Jr 18 .95		2 F 17 .48	4 Mr 18 .01
6 S 11 .19	7 O 10 .72	2 N 9 .25	3 D 8 .78	61	5 Jr 7 .31		6 F 5 .84	1 Mr 7 .37
3 Au 31 .56	5 S 30 .09	6 O 29 .62	1 N 28 .15		2 D 27 .68	62	4 Jr 26 .21	5 F 24 .74
2 S 19 .45	3 O 18 .99	5 N 17 .52	7 D 17 .05	63	1 Jr 15 .58		3 F 14 .11	4 Mr 15 .64
6 S 8 .82	1 O 8 .35	2 N 6 .88	4 D 6 .41	64	5 Jr 4 .94		7 F 3 .47	2 Mr 4 .01
5 S 26 .72	7 O 26 .25	1 N 24 .78	3 D 24 .31	65	4 Jr 22 .84		6 F 21 .37	7 Mr 22 .90
3 S 16 .09	4 O 15 .62	6 N 14 .15	7 D 13 .68	66	2 Jr 12 .21		3 F 10 .74	5 Mr 12 .27
7 S 5 .45	1 O 4 .98	3 N 3 .51	5 D 3 .05	67	6 Jr 1 .58		1 Jr 31 .11	2 Mr 1 .64
6 S 24 .35	7 O 23 .88	2 N 22 .41	3 D 21 .94	68	5 Jr 20 .47		7 F 19 .00	1 Mr 19 .53
3 S 12 .72	5 O 12 .25	6 N 10 .78	1 D 10 .31	69	2 Jr 8 .84		4 F 7 .37	5 Mr 8 .90
1 S 2 .09	2 O 1 .62	4 O 31 .15	5 N 29 .68		7 D 29 .21	70	1 Jr 27 .74	3 F 26 .27
6 S 20 .98	1 O 20 .51	3 N 19 .04	4 D 18 .57	71	6 Jr 17 .11		7 F 15 .64	2 Mr 17 .17
4 S 10 .35	6 O 10 .88	7 N 8 .41	1 D 7 .94	72	3 Jr 6 .47		5 F 5 .00	6 Mr 5 .53
3 S 28 .25	4 O 27 .78	6 N 26 .31	7 D 25 .84	73	2 Jr 24 .37		3 F 22 .90	5 Mr 24 .43
7 S 17 .61	2 O 17 .15	3 N 15 .68	5 D 15 .21	74	6 Jr 13 .74		1 F 12 .27	2 Mr 13 .80
4 S 6 .98	6 O 6 .51	1 N 5 .04	2 D 3 .57	75	4 Jr 3 .10		5 F 1 .63	7 Mr 3 .17
3 S 25 .88	5 O 25 .41	6 N 23 .94	1 D 23 .47	76	3 Jr 22 .00		4 F 20 .53	6 Mr 21 .06
1 S 14 .25	2 O 13 .78	4 N 12 .31	5 D 11 .84	77	7 Jr 10 .37		1 F 8 .90	3 Mr 10 .43
5 S 3 .61	7 O 3 .14	1 N 1 .67	3 D 1 .21		4 D 30 .74	78	6 Jr 29 .27	7 F 27 .80
4 S 22 .51	6 O 22 .04	7 N 20 .57	2 D 20 .10	79	3 Jr 18 .63		5 F 17 .16	6 Mr 18 .69
1 S 11 .88	3 O 11 .41	4 N 9 .94	6 D 9 .47	80	1 Jr 8 .00		2 F 6 .53	4 Mr 7 .06
6 Au 31 .25	7 S 29 .78	Margasira Kshaya		3 N 27 .84	5 D 27 .37	81	6 Jr 25 .90	1 F 24 .43
5 S 19 .14	6 O 18 .67	1 N 17 .20	2 D 16 .73	82	4 Jr 15 .27		5 F 13 .80	7 Mr 15 .33
2 S 8 .51	4 O 8 .04	5 N 6 .57	7 D 6 .10	83	1 Jr 4 .63		3 F 3 .16	4 Mr 4 .69
1 S 27 .41	2 O 26 .94	4 N 25 .47	6 D 25 .00	84	7 Jr 23 .53		2 F 22 .06	3 Mr 22 .59
5 S 15 .77	7 O 15 .31	1 N 13 .84	3 D 13 .37	85	4 Jr 11 .90		6 F 10 .43	7 Mr 11 .96
3 S 5 .14	4 O 4 .67	6 N 3 .20	7 D 2 .73	86	2 Jr 1 .26		3 Jr 30 .79	5 Mr 1 .33
2 S 24 .04	3 O 23 .57	5 N 22 .10	6 D 21 .63	87	1 Jr 20 .16		2 F 18 .69	4 Mr 20 .22
6 S 13 .41	7 O 12 .94	2 N 11 .47	4 D 11 .00	88	5 Jr 9 .53		7 F 8 .06	1 Mr 8 .59
3 S 1 .77	5 O 1 .30	6 O 30 .83	1 N 29 .37		2 D 28 .90	89	4 Jr 27 .43	5 F 25 .96

TABLE X—

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and Day A. D.	Fraction of Day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom. col. 6		☉'s Anom. col. 7		☉'s Anom. col. 8		☉'s Anom. col. 9		☉'s Anom. col. 10										
										Vaisakha.	Jyeshtha	Ashada	Shravana	Bhadrapada														
Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction									
4490	1446	1811	26M	·3958	1·0862	22·942	1389	6	7	Mr	27	·49	2	Ap	26	·02	5	Je	24	·08	6	Jl	23	·61	1	Au	22	·1
4491	1447	1812	26M	·6546	19·7251	21·075	1390	7	6	Ap	15	·39	3	My	25	·55	2	Je	13	·45	3	Jl	12	·98	5	Au	11	·5
4492	1448	1813	26M	·9134	8·8334	17·232	1391	1	3	Ap	4	·75	7	My	14	·92	6	Je	2	·81	1	Jl	2	·34	2	Jl	31	·8
4493	1449	1814	26M	·1721	27·4723	15·366	1392	2	2	Ap	22	·65	5	My	4	·28	6	Je	2	·81	1	Jl	2	·34	4	Au	30	·4
4494	1450	1815	26M	·4309	16·5806	11·523	1393	4	7	Ap	12	·02	4	My	22	·18	5	Je	20	·71	7	Jl	20	·24	1	Au	18	·7
4495	1451	1816	26M	·6896	5·6889	7·680	1394	5	4	Ap	1	·38	1	My	11	·55	3	Je	10	·08	4	Jl	9	·61	6	Au	8	·1
4496	1452	1817	26M	·9484	24·3278	5·813	1395	6	3	Ap	20	·28	6	My	1	·91	7	My	30	·45	1	Je	28	·98	5	Au	27	·0
4497	1453	1818	26M	·2071	13·4361	1·970	1396	7	7	Ap	8	·65	3	Je	18	·34	7	Je	18	·34	7	Jl	17	·87	2	Au	16	·4
4498	1454	1819	26M	·4659	2·5444	25·683	1397	2	5	Mr	29	·02	2	My	8	·18	5	Je	6	·71	5	Jl	6	·24	6	Au	4	·7
4499	1455	1820	26M	·7247	21·1833	23·816	1398	3	3	Ap	16	·91	6	Ap	27	·55	2	Je	25	·61	4	Jl	25	·14	5	Au	23	·6
4500	1456	1821	26M	·9834	10·2916	19·973	1399	4	1	Ap	6	·28	1	My	27	·08	5	Je	14	·97	1	Jl	14	·51	3	Au	13	·0
4501	1457	1822	26M	·2422	28·9305	18·106	1400	5	7	Ap	24	·18	2	My	5	·81	4	Je	4	·34	5	Jl	3	·87	7	Au	2	·4
4502	1458	1823	26M	·5009	18·0388	14·264	1401	7	4	Ap	13	·55	6	My	16	·44	6	Je	14	·97	1	Jl	14	·51	3	Au	13	·0
4503	1459	1824	26M	·7597	7·1471	10·421	1402	1	1	Ap	2	·91	2	My	19	·81	3	Je	18	·34	7	Je	18	·34	7	Jl	17	·87
4504	1460	1825	27M	·0184	25·7860	8·554	1403	2	7	Ap	21	·81	5	My	4	·28	6	Je	2	·81	1	Jl	2	·34	4	Au	30	·4
4505	1461	1826	26M	·2772	14·8943	4·711	1404	3	5	Ap	10	·18	4	My	11	·55	3	Je	10	·08	4	Jl	9	·61	6	Au	8	·1
4506	1462	1827	26M	·5360	4·0026	0·869	1405	5	2	Mr	30	·54	4	Ap	29	·07	5	My	28	·61	1	Jl	26	·67	3	Au	25	·2
4507	1463	1828	26M	·7947	22·6414	26·556	1406	6	1	Ap	18	·44	7	Je	27	·14	6	Je	27	·14	6	Jl	16	·03	7	Au	14	·5
4508	1464	1829	27M	·0535	11·7497	22·714	1407	7	5	Ap	7	·81	2	My	21	·34	3	Je	19	·87	5	Jl	19	·40	6	Au	17	·9
4509	1465	1830	26M	·3122	0·8580	18·871	1408	1	3	Mr	27	·18	6	My	9	·71	1	Je	8	·24	2	Jl	7	·77	4	Au	6	·3
4510	1466	1831	26M	·5710	19·4969	17·004	1409	3	2	Ap	15	·07	4	Ap	29	·07	7	Je	27	·14	6	Jl	16	·03	7	Au	14	·5
4511	1467	1832	26M	·8297	8·6052	13·161	1410	4	6	Ap	4	·44	6	My	21	·34	3	Je	19	·87	5	Jl	19	·40	6	Au	17	·9
4512	1468	1833	27M	·0885	27·2441	11·295	1411	5	5	Ap	23	·34	7	My	7	·34	1	Je	5	·87	3	Jl	5	·40	4	Au	3	·9
4513	1469	1834	26M	·3472	16·3524	7·453	1412	6	2	Ap	11	·71	6	My	25	·24	7	Je	23	·77	2	Jl	23	·30	3	Au	21	·8
4514	1470	1835	26M	·6060	5·4607	3·609	1413	1	7	Ap	1	·07	3	My	14	·60	5	Je	13	·13	6	Jl	12	·67	1	Au	11	·2
4515	1471	1836	26M	·8648	24·0996	1·742	1414	2	5	Ap	19	·97	7	My	3	·97	2	Je	2	·50	4	Jl	2	·03	5	Jl	31	·5
4516	1472	1837	27M	·1235	13·2079	25·454	1415	3	3	Ap	9	·34	6	My	22	·87	1	Je	21	·40	2	Jl	20	·93	4	Au	19	·4
4517	1473	1838	26M	·3823	2·3162	21·612	1416	4	7	Mr	28	·70	4	My	11	·24	5	Je	9	·77	7	Jl	9	·30	1	Au	7	·8
4518	1474	1839	26M	·6410	20·9551	19·745	1417	6	6	Ap	16	·60	1	Ap	30	·60	3	My	30	·13	6	Jl	28	·19	7	Au	26	·7
4519	1475	1840	26M	·8998	10·0634	15·902	1418	7	3	Ap	5	·97	4	Je	28	·66	4	Je	28	·66	4	Jl	28	·19	7	Au	26	·7
4520	1476	1841	27M	·1585	28·7023	14·035	1419	1	2	Ap	24	·87	7	My	19	·50	2	Je	18	·03	3	Jl	17	·56	5	Au	16	·0
4521	1477	1842	26M	·4173	17·8106	10·193	1420	2	7	Ap	13	·23	2	Je	18	·03	3	Je	18	·03	3	Jl	17	·56	5	Au	16	·0
4522	1478	1843	26M	·6761	6·9189	6·350	1421	4	4	Ap	2	·60	4	My	8	·87	6	Je	7	·40	7	Jl	6	·93	2	Au	5	·4
4523	1479	1844	26M	·9348	23·5578	4·483	1422	5	3	Ap	21	·50	2	Ap	27	·23	5	Je	25	·30	6	Jl	24	·83	1	Au	23	·3
4524	1480	1845	27M	·1936	14·6660	0·640	1423	6	7	Ap	10	·87	3	My	26	·77	1	My	16	·13	2	Je	14	·66	4	Jl	14	·19
4525	1481	1846	26M	·4523	3·7743	24·352	1424	7	5	Mr	30	·23	5	My	5	·50	7	Je	4	·03	1	Jl	3	·56	3	Au	2	·0
4526	1482	1847	26M	·7111	22·4132	22·485	1425	2	4	Ap	18	·13	4	Ap	27	·23	5	Je	25	·30	6	Jl	24	·83	1	Au	23	·3
4527	1483	1848	26M	·9698	11·5215	18·644	1426	3	1	Ap	7	·50	1	My	16	·13	2	Je	14	·66	4	Jl	14	·19	5	Au	12	·7
4528	1484	1849	27M	·2286	0·6298	14·800	1427	4	5	Mr	27	·86	5	My	5	·50	7	Je	4	·03	1	Jl	3	·56	3	Au	2	·0

Surya Siddhanta.

+ 147.65293	+ 177.18353	+ 206.71411	+ 236.24470	+ 265.77529	+ 295.30588	{ +324.83647 +354.36705 +21.736 +23.712		
+ 9.880	+ 11.856	+ 13.832	+ 15.808	+ 17.784	+ 19.760			
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction
2 S 20 .67	4 O 20○ .20	5 N 18 .73	7 D 18 .26	90 1 Jr 16 .79		3 F 15 .32	4 Mr 16 .85	
7 S 10 .04	1 O 9● .57	3 N 8 .10	4 D 7 .63	91 6 Jr 6 .16		7 F 4 .69	2 Mr 6○ .22	
5 S 28 .94	7 O 28 .47	2 N 27 .00	3 D 26 .53	92 5 Jr 25 .06		6 F 23○ .59	1 Mr 24 .12	
3 S 17 .30	4 O 16 .83	6 N 15 .36	7 D 14 .89	93 2 Jr 13 .43		3 F 11○ .96	5 Mr 13 .49	
7 S 6 .67	2 O 6 .20	3 N 4 .73	5 D 4 .26	94 6 Jr 2 .79		1 F 1● .32	2 Mr 2 .85	
6 S 25 .57	1 O 25 .10	2 N 23 .63	4 D 23 .16	95 5 Jr 21 .69		7 F 20 .22	1 Mr 21 .75	
3 S 14 .93	5 O 14 .47	7 N 13 .00	1 D 12○ .53	96 3 Jr 11 .06		4 F 9 .59	6 Mr 10 .12	
1 S 3 .30	2 O 2 .83	4 N 1 .36	5 N 30○ .89	7 D 30 .42	97	1 Jr 28 .95	3 F 27 .49	
7 S 22 .20	1 O 21 .73	3 N 20 .26	4 D 18 .79	98 6 Jr 18 .32		7 F 16 .85	2 Mr 18 .38	
4 S 11 .57	6 O 11○ .10	7 N 9● .63	2 D 9 .16	99 3 Jr 7 .69		5 F 6 .22	6 Mr 7 .75	
1 Au 31 .93	{ 3 S 30○ .46 4 O 29 .99	6 N 28 .53	Pausha. Kshaya.		14 1 D 28 .06	00	2 Jr 26 .59	{ 4 Fr 25 .12 5 Mr 25○ .65
7 S 18○ .83	2 O 18 .36	3 N 16 .89	5 D 16 .42	01 6 Jr 14 .95		1 F 13 .48	3 Mr 15● .01	
5 S 8● .20	6 O 7 .73	1 N 6 .26	2 D 5 .79	02 4 Jr 4 .32		5 F 2○ .85	7 Mr 4● .38	
4 S 27 .10	5 O 26 .63	7 N 25 .16	1 D 24 .69	03 3 Jr 23○ .22		4 F 21 .75	6 Mr 23 .28	
1 S 16 .46	2 O 15 .99	4 N 14 .52	6 D 14 .05	04 7 Jr 12○ .59		2 F 11 .12	3 Mr 11 .65	
5 S 4 .83	7 O 4 .36	1 N 2 .89	3 D 2 .42	4 D 31● .95	05	6 Jr 30 .48	1 Mr 1 .01	
4 S 23 .73	6 O 23 .26	7 N 21○ .79	2 D 21 .32	06 3 Jr 19 .85		5 F 18 .38	6 Mr 19 .91	
2 S 13 .09	3 O 12 .63	5 N 11○ .16	6 D 10 .69	07 1 Jr 9 .22		2 F 7 .75	4 Mr 9 .28	
6 S 2 .46	7 O 1 .99	2 O 31○ .52	4 N 30 .05	5 D 29 .58	08	7 Jr 28 .11	1 F 26 .64	
5 S 20 .36	6 O 19● .89	1 N 18 .42	2 D 17 .95	09 4 Jr 16 .48		6 F 15 .01	7 Mr 16○ .54	
2 S 9 .73	4 O 9● .26	5 N 7 .79	7 D 7 .32	10 1 Jr 5 .85		3 F 4 .38	4 Mr 5○ .91	
1 S 28 .62	3 O 28 .15	4 N 26 .69	6 D 26 .22	11 7 Jr 24 .75		2 F 23○ .28	3 Mr 24 .81	
5 S 17 .99	7 O 17 .52	2 N 16 .05	3 D 15 .58	12 5 Jr 14 .11		6 F 12● .34	1 Mr 13 .17	
3 S 6 .36	4 O 5 .89	6 N 4 .42	7 D 3 .95	13 2 Jr 2 .48		4 F 1● .01	5 Mr 2 .54	
2 S 25 .26	3 O 24 .79	5 N 23 .32	6 D 22○ .85	14 1 Jr 21 .38		2 F 19 .91	4 Mr 21 .44	
6 S 14 .62	1 O 14 .15	2 N 12 .68	4 D 12○ .21	15 5 Jr 18 .75		7 F 9 .28	1 Mr 10 .81	
3 S 3 .99	5 O 3 .52	7 N 2 .05	1 D 1 .58	3 D 31 .11	16	4 Jr 29 .64	6 Fr 28 .17	
2 S 21 .89	4 O 21○ .42	5 N 19 .95	7 D 19 .48	17 2 Jr 13 .01		3 F 16 .54	5 Mr 18 .07	
7 S 11 .25	1 O 10○ .79	3 N 9 .32	4 D 8 .85	18 6 Jr 7 .38		7 F 5 .91	2 Mr 7 .44	
4 Au 31 .62	{ 6 S 30○ .15 7 O 29 .68	2 N 28 .21	3 D 27 .74	19 5 Jr 26 .27		6 F 24 .81	1 Mr 26○ .34	
3 S 19 .52	5 O 19 .05	6 N 17 .58	1 D 17 .11	20 2 Jr 15 .64		4 F 14○ .17	5 Mr 14 .70	
7 S 7● .89	2 O 7 .42	3 N 5 .95	5 D 5 .48	21 7 Jr 4 .01		1 F 2○ .54	3 Mr 4 .07	
6 S 26 .78	1 O 26 .31	2 N 24 .85	4 D 24 .38	22 5 Jr 22●○ .91		7 F 21 .44	1 Mr 22 .97	
4 S 16 .15	5 O 15 .68	7 N 14 .21	1 D 13 .74	23 3 Jr 12 .27		4 F 10 .80	6 Mr 12 .33	
1 S 5 .52	3 O 5 .05	4 N 3 .58	6 D 3○ .11	24 7 Jr 1● .64		2 Jr 31 .17	3 F 29 .70	
7 S 23 .42	1 O 22 .95	3 N 21○ .48	5 D 21 .01	25 6 Jr 19 .54		1 F 18 .07	2 Mr 19 .60	
4 S 12 .78	6 O 12 .31	7 N 10●○ .84	2 D 10 .37	26 3 Jr 8 .91		5 F 7 .44	6 Mr 8 .97	
2 S 2 .15	3 O 1 .68	5 O 31 .21	6 N 29 .74	1 D 29 .27	27	2 Jr 27 .80	4 F 26 .33	
1 S 21 .05	2 O 20 .58	4 N 19 .11	5 D 18 .64	28 7 Jr 17 .17		1 F 15 .70	3 Mr 16○ .23	

TABLE X—

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.		First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	☉'s Anom col. 6 + 29.53059 + 59.06117 + 88.59176 + 118.12235 ☾'s Anom col. 7 + 1.976 + 3.952 + 5.928 + 7.904																								
								Week-day of 1st January.				Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada				
			Month and day A. D.	Fraction of day.				Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	
4529	1485	1350	26M	.4873	19.2687	12.933	1428	5	4	Ap	14	.76	6	My	14	.29	7	Je	12	.82	2	Jl	12	.35	3	Au	10	.88	4	Shr	28	.12
4530	1486	1351	26M	.7461	8.3770	9.090	1429	7	2	Ap	4	.13	3	My	3	.66	5	Je	2	.19	6	Jl	1	.72	1	Jl	31	.25	2	Shr	29	.75
4531	1487	1352	27M	.0049	27.0159	7.224	1430	1	1	Ap	23	.03	2	My	22	.56	4	Je	21	.09	5	Jl	20	.62	7	Au	19	.15	8	Shr	17	.85
4532	1488	1353	27M	.2636	16.1242	3.381	1431	2	5	Ap	12	.39	6	My	11	.92	1	Je	10	.45	2	Jl	9	.99	4	Au	8	.52	5	Shr	26	.48
4533	1489	1354	26M	.5224	5.2325	27.093	1432	3	2	Mr	31	.76	4	Ap	30	.29	5	My	29	.82	1	Jl	27	.88	3	Au	26	.41	4	Shr	24	.59
4534	1490	1355	26M	.7811	23.8714	25.226	1433	5	1	Ap	19	.66	3	My	19	.19	4	Je	17	.72	6	Jl	17	.25	7	Au	15	.78	8	Shr	13	.22
4535	1491	1356	27M	.0399	12.9797	21.383	1434	6	6	Ap	9	.03	7	My	8	.56	2	Je	7	.09	3	Jl	6	.62	5	Au	5	.15	6	Shr	2	.85
4536	1492	1357	27M	.2986	2.0880	17.541	1435	7	3	Mr	29	.39	4	Ap	27	.92	7	Je	25	.98	2	Jl	25	.51	4	Au	24	.05	5	Shr	21	.61
4537	1493	1358	26M	.5574	20.7269	15.674	1436	1	2	Ap	16	.29	3	My	15	.82	5	Je	14	.35	6	Jl	13	.88	1	Au	12	.41	2	Shr	9	.97
4538	1494	1359	26M	.8162	9.8352	11.831	1437	3	6	Ap	5	.66	1	My	5	.19	2	Je	8	.72	4	Jl	3	.25	5	Au	1	.78	6	Shr	29	.22
4539	1495	1360	27M	.0749	28.4741	8.964	1438	4	5	Ap	24	.55	7	My	24	.09	1	Je	22	.62	3	Jl	22	.15	4	Au	20	.68	5	Shr	17	.22
4540	1496	1361	27M	.3337	17.5824	6.122	1439	5	2	Ap	13	.92	4	My	13	.45	5	Je	11	.98	7	Jl	11	.51	2	Au	10	.04	3	Shr	7	.61
4541	1497	1362	26M	.5924	6.6907	2.279	1440	6	7	Ap	2	.29	1	My	1	.81	3	My	31	.35	4	Je	29	.88	7	Au	27	.94	8	Shr	24	.00
4542	1498	1363	26M	.8512	25.3295	0.412	1441	1	6	Ap	21	.19	7	My	20	.72	2	Je	19	.25	3	Jl	18	.78	5	Au	17	.31	6	Shr	14	.86
4543	1499	1364	27M	.1099	14.4378	24.124	1442	2	3	Ap	10	.55	5	My	10	.08	6	Je	8	.61	1	Jl	8	.15	2	Au	6	.68	3	Shr	3	.25
4544	1500	1365	27M	.3687	3.5461	20.281	1443	3	7	Mr	30	.92	2	Ap	29	.45	3	My	28	.98	7	Jl	27	.04	1	Au	25	.57	2	Shr	22	.14
4545	1501	1366	26M	.6275	22.1850	18.414	1444	4	6	Ap	17	.82	1	My	17	.35	2	Je	15	.88	4	Jl	15	.41	5	Au	13	.94	6	Shr	10	.00
4546	1502	1367	26M	.8862	11.2933	14.572	1445	6	4	Ap	7	.18	5	My	6	.71	7	Je	5	.25	1	Jl	4	.78	3	Au	3	.31	4	Shr	29	.85
4547	1503	1368	27M	.1450	0.4016	10.729	1446	7	1	Mr	27	.55	4	My	25	.61	6	Je	24	.14	7	Jl	23	.67	2	Au	22	.20	3	Shr	19	.76
4548	1504	1369	27M	.4037	19.0405	8.862	1447	1	7	Ap	15	.45	1	My	14	.98	3	Je	13	.51	5	Jl	13	.04	6	Au	11	.57	7	Shr	8	.04
4549	1505	1370	26M	.6625	8.1488	5.019	1448	2	4	Ap	3	.82	6	My	3	.35	7	Je	1	.88	2	Jl	1	.41	3	Jl	30	.94	4	Au	29	.47
4550	1506	1371	26M	.9212	26.7877	3.153	1449	4	3	Ap	22	.71	5	My	22	.24	6	Je	20	.77	1	Jl	20	.31	2	Au	18	.84	3	Shr	15	.37
4551	1507	1372	27M	.1800	15.8960	26.864	1450	5	1	Ap	12	.08	2	My	11	.61	4	Je	10	.14	5	Jl	9	.67	7	Au	8	.20	8	Shr	5	.73
4552	1508	1373	27M	.4387	5.0043	23.022	1451	6	5	Ap	1	.45	6	Ap	30	.98	1	My	30	.51	4	Jl	28	.57	6	Au	27	.10	7	Shr	24	.63
4553	1509	1374	26M	.6975	23.6432	21.155	1452	7	4	Ap	19	.35	5	My	18	.88	7	Je	17	.41	1	Jl	16	.94	3	Au	15	.47	4	Shr	12	.00
4554	1510	1375	26M	.9563	12.7515	17.312	1453	2	1	Ap	8	.71	2	My	8	.24	4	Je	6	.77	6	Jl	6	.30	7	Au	4	.83	8	Shr	1	.36
4555	1511	1376	27M	.2150	1.8598	13.469	1454	3	6	Mr	29	.08	7	Ap	27	.61	3	Je	25	.67	5	Jl	25	.20	6	Au	23	.73	7	Shr	20	.26
4556	1512	1377	27M	.4738	20.4987	11.603	1455	4	4	Ap	16	.98	6	My	16	.51	1	Je	15	.04	2	Jl	14	.57	4	Au	13	.10	5	Shr	10	.63
4557	1513	1378	26M	.7325	9.6070	7.760	1456	5	2	Ap	5	.34	3	My	4	.87	5	Je	3	.41	6	Jl	2	.94	1	Au	1	.47	2	Shr	29	.00
4558	1514	1379	26M	.9913	28.2459	5.893	1457	7	1	Ap	24	.24	2	My	23	.77	4	Je	22	.30	5	Jl	21	.83	7	Au	20	.36	8	Shr	17	.89
4559	1515	1380	27M	.2500	17.3542	2.050	1458	1	5	Ap	13	.61	7	My	13	.14	1	Je	11	.67	3	Jl	11	.20	4	Au	9	.73	5	Shr	6	.26
4560	1516	1381	27M	.5088	6.4625	25.762	1459	2	2	Ap	2	.98	4	My	2	.51	6	Je	1	.04	7	Je	30	.57	3	Au	28	.63	4	Shr	25	.16
4561	1517	1382	26M	.7676	25.1013	23.896	1460	3	1	Ap	20	.87	3	My	20	.40	4	Je	18	.93	6	Jl	18	.47	1	Au	17	.00	2	Shr	14	.53
4562	1518	1383	27M	.0253	14.2096	20.053	1461	5	6	Ap	10	.24	7	My	9	.77	2	Je	8	.30	3	Jl	7	.83	5	Au	6	.36	6	Shr	3	.89
4563	1519	1384	27M	.2851	3.3179	16.210	1462	6	3	Mr	30	.61	5	Ap	29	.14	6	My	28	.67	2	Jl	26	.73	4	Au	25	.26	5	Shr	22	.79
4564	1520	1385	27M	.5438	21.9568	14.343	1463	7	2	Ap	18	.51	4	My	18	.04	5	Je	16	.57	7	Jl	16	.10	1	Au	14	.63	2	Shr	11	.16
4565	1521	1386	26M	.8026	11.0651	10.501	1464	1	6	Ap	6	.87	1	My	6	.40	2	Je	4	.93	4	Jl	4	.46	5	Au	2	.99	6	Shr	29	.02
4566	1522	1387	27M	.0613	0.1734	6.658	1465	3	5	Ap	25	.77	7	My	25	.30	1	Je	23	.83	3	Jl	23	.36	4	Au	21	.89	5	Shr	18	.42
4567	1523	1388	27M	.3201	18.8123	4.791	1466	4	3	Ap	15	.15	4	My	14	.67	6	Je	13	.20	7	Jl	12	.73	2	Au	11	.26	3	Shr	8	.79

Surya Siddhanta.

147-65293	+ 177-18353	+206-71411	+ 236-24470	+ 265-77529	+ 295-30588	{ +324-83647 +354-36705 +21-736 +23-712		
9-880	+ 11-856	+ 13-832	+ 15-808	+ 17-784	+ 19-760			
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra
Week-day Month Day Fraction Week-day Month Day Fraction	Week-day Month Day Fraction Week-day Month Day Fraction	Week-day Month Day Fraction Week-day Month Day Fraction	Week-day Month Day Fraction Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction
S 9 [○] .41 6 O 8 [●] .95 1 N 7 .48 3 D 7 .01 29 4 Jr 5 .54	S 28 .31 5 O 27 .84 7 N 26 .37 1 D 25 .90 30 3 Jr 24 .43					6 F 4 .07 7 Mr 5 [○] .60		
S 17 .68 3 O 17 .21 4 N 15 .74 6 D 15 .27 31 7 Jr 13 .80	S 7 .05 7 O 6 .58 2 N 5 .11 3 D 4 .64 32 5 Jr 3 [○] .17					4 F 22 .96 6 Mr 24 .50		
S 24 .94 6 O 24 .47 1 N 23 .01 2 D 22 [○] .54 33 4 Jr 21 .07						2 F 12 .33 3 Mr 13 .86		
S 14 .31 3 O 13 .84 5 N 12 .37 6 D 11 .90 34 1 Jr 10 .43	S 3 .68 1 O 3 .21 2 N 1 .74 4 D 1 .27 35 5 D 30 .80					6 F 1 [●] .70 1 Mr 2 .23		
S 22 .58 7 O 22 [○] .11 1 N 20 [●] .64 3 D 20 .17 36 4 Jr 18 .70						5 F 19 .60 7 Mr 21 .13		
S 10 .94 4 O 10 [○] .47 6 N 9 .00 7 D 8 .53 37 2 Jr 7 .07	S 31 .31 { 1 S 29 [●] .84 4 N 27 .90 6 D 27 .43 38 7 Jr 25 .96					2 F 8 .96 4 Mr 10 .49		
S 19 [●] .21 7 O 18 .74 2 N 17 .27 3 D 16 .80 39 5 Jr 15 .33						7 Jr 29 .33 1 F 27 .86		
S 8 .57 5 O 8 .11 6 N 6 .64 1 D 6 .17 40 2 Jr 4 .70						6 F 17 .23 7 Mr 17 .76		
S 26 .47 4 O 26 .00 5 N 24 .53 7 D 24 .06 41 1 Jr 22 [●] .59						3 F 5 .60 5 Mr 7 .13		
S 15 .84 1 O 15 .37 2 N 13 .90 4 D 13 [○] .43 42 5 Jr 11 [●] .96	S 31 .31 { 3 O 29 .37 4 N 27 .90 6 D 27 .43 38 7 Jr 25 .96					2 F 24 [○] .49 4 Mr 26 .02		
S 5 .21 5 O 4 .74 7 N 3 .27 1 D 2 [○] .80 43 3 Jr 1 .33						6 F 13 [○] .86 1 Mr 15 .39		
S 24 .10 4 O 23 .63 6 N 22 [○] .17 7 D 21 .70 44 2 Jr 20 .23						4 F 3 [○] .23 5 Mr 3 .76		
S 12 .47 2 O 12 .00 3 N 10 [●] .53 5 D 10 .06 45 6 Jr 8 .59						3 F 21 .13 4 Mr 22 .66		
S 1 .84 6 O 1 .37 7 O 30 .90 2 N 29 .43 46 3 D 28 .96						7 F 10 .49 2 Mr 12 .02		
S 20 [○] .73 5 O 20 .27 6 N 18 .80 1 D 18 .33 47 2 Jr 16 .86						4 Jr 30 .86 6 Mr 1 .39		
S 10 [●] .10 2 O 9 .63 4 N 8 .16 5 D 7 .69 48 7 Jr 6 .22						3 F 18 .76 5 Mr 19 .29		
S 28 .00 1 O 27 .53 3 N 26 .06 4 D 25 .59 49 6 Jr 24 .12						1 F 7 .12 2 Mr 8 .65		
S 17 .37 5 O 16 .90 7 N 15 .43 1 D 14 .96 50 3 Jr 13 [○] .49						5 Jr 27 .49 7 F 26 .02		
S 6 .73 3 O 6 .26 4 N 4 .79 6 D 4 .33 51 7 Jr 2 [○] .86						4 F 15 .39 5 Mr 16 [○] .92		
S 25 .63 2 O 25 .16 3 N 23 .62 5 D 23 [●] .22 52 6 Jr 21 .75						1 F 4 .75 3 Mr 5 [●] .29		
S 14 .00 6 O 13 .53 1 N 12 .06 2 D 11 [●] .59 53 4 Jr 19 .12						7 F 22 .65 2 Mr 24 .18		
S 3 .37 3 O 2 .90 5 N 1 [○] .43 6 N 30 .96 54 1 D 30 .49						5 F 12 .02 6 Mr 13 .55		
S 22 .26 2 O 21 [○] .79 4 N 20 .32 5 D 19 .85 55 7 Jr 18 .39						2 F 1 .39 3 Mr 2 .92		
S 11 .63 7 O 11 .16 1 N 9 .69 3 D 9 .22 56 4 Jr 7 .75						1 F 20 .28 2 Mr 20 .81		
Au 31 .00 { 4 S 29 .53 7 N 27 .59 2 D 27 .12 57 3 Jr 25 .65						5 F 8 .65 7 Mr 10 .18		
S 18 .89 3 O 18 .43 4 N 16 .96 6 D 16 .49 58 1 Jr 15 .02						3 Jr 29 .02 4 F 27 .55		
S 8 .26 7 O 7 .79 2 N 6 .32 3 D 5 .85 59 5 Jr 4 .38						1 F 16 .92 3 Mr 18 .45		
S 27 .16 6 O 26 .69 1 N 25 .22 2 D 24 [○] .75 60 4 Jr 13 .28						6 F 6 .28 7 Mr 6 [○] .81		
S 15 .53 4 O 15 .06 5 N 13 .59 7 D 13 [○] .12 61 1 Jr 11 .65						5 F 24 [○] .18 6 Mr 25 .71		
S 4 .89 1 O 4 .42 2 N 2 .95 4 D 2 [●] .49 62 6 Jr 1 .02						2 F 13 [○] .55 4 Mr 15 .08		
S 23 .79 7 O 23 .32 1 N 21 [●] .85 3 D 21 .38 63 4 Jr 19 .91						6 F 2 [●] .91 1 Mr 4 .45		
S 13 .16 4 O 12 .69 6 N 11 [●] .22 7 D 10 .75 64 2 Jr 9 .28						5 F 21 .81 7 Mr 22 .34		
S 1 .53 2 O 1 [○] .06 3 O 30 .59 5 N 29 .12 65 6 D 28 .65						3 F 10 .18 4 Mr 11 .71		
S 20 [○] .42 7 O 19 .95 2 N 16 .48 4 D 18 .01 66 5 Jr 16 .55						7 Jr 30 .55 2 Mr 1 .08		
S 9 [○] .79 5 O 9 .32 6 N 7 .85 1 D 7 .38 67 2 Jr 5 .91						6 F 18 .44 7 Mr 19 .97		
						3 F 7 .81 5 Mr 8 .34		
						1 Jr 27 .18 { 2 F 25 .71		
						4 Mr 27 [○] .24		
						7 F 15 .08 1 Mr 16 .61		
						4 F 4 .44 5 Mr 5 [●] .97		

TABLE X-

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A. D.	Week-day of 1st January.	☉'s Anom col. 6					☉'s Anom col. 7					☉'s Anom col. 8					☉'s Anom col. 9									
								+ 29.53059					+ 1.976					+ 3.952					+ 5.928					+ 7.904				
								Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapad								
								Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day						
4568	1524	1389	27M .5789	7.9206	0.948	1467	5	7	Ap	4	.50	2	My	4	.03	3	Je	2	.56	5	Jl	2	.09	6	Jl	31						
4569	1525	1390	26M .8376	26.5595	26.636	1468	6	6	Ap	22	.40	7	My	21	.93	2	Je	20	.46	3	Jl	19	.99	5	Au	18						
4570	1526	1391	27M .0964	15.6578	22.793	1469	1	3	Ap	11	.77	5	My	11	.30	6	Je	9	.83	1	Jl	9	.36	2	Au	7						
4571	1527	1392	27M .3551	4.7761	18.951	1470	2	1	Ap	1	.14	2	Ap	30	.67	4	My	30	.20	7	Jl	28	.26	1	Au	26						
4572	1528	1393	27M .6139	23.4150	17.084	1471	3	7	Ap	20	.03	1	My	19	.56	3	Je	18	.09	4	Jl	17	.62	6	Au	16						
4573	1529	1394	26M .8726	12.5233	13.241	1472	4	4	Ap	8	.40	5	My	7	.93	7	Je	6	.46	1	Jl	5	.99	3	Au	4						
4574	1530	1395	27M .1314	1.6316	9.398	1473	6	1	Mr	28	.77	3	Ap	27	.30	6	Je	25	.36	7	Jl	24	.89	2	Au	23						
4575	1531	1396	27M .3901	20.2705	7.532	1474	7	7	Ap	16	.67	2	My	16	.20	3	Je	14	.73	5	Jl	14	.26	6	Au	12						
4576	1532	1397	27M .6489	9.3788	3.689	1475	1	5	Ap	6	.03	6	My	5	.56	1	Je	4	.09	2	Jl	3	.62	4	Au	2						
4577	1533	1398	26M .9077	28.0176	1.822	1476	2	3	Ap	23	.93	5	My	23	.46	6	Je	21	.99	1	Jl	21	.52	3	Au	20						
4578	1534	1399	27M .1654	17.1259	25.534	1477	4	1	Ap	13	.30	2	My	12	.83	4	Je	11	.36	5	Jl	10	.89	7	Au	9						
4579	1535	1400	27M .4252	6.2342	21.691	1478	5	5	Ap	2	.66	7	My	2	.19	1	My	31	.72	3	Je	30	.25	6	Au	28						
4580	1536	1401	27M .6839	24.8731	19.825	1479	6	4	Ap	21	.56	6	My	21	.09	7	Je	19	.62	2	Jl	19	.15	3	Au	17						
4581	1537	1402	26M .9427	13.9814	15.982	1480	7	1	Ap	9	.93	3	My	9	.46	4	Je	7	.99	6	Jl	7	.52	1	Au	6						
4582	1538	1403	27M .2014	3.0897	12.139	1481	2	6	Mr	30	.30	7	Ap	28	.83	2	My	28	.36	5	Jl	26	.42	6	Au	24						
4583	1539	1404	27M .4602	21.7286	10.272	1482	3	5	Ap	18	.19	6	My	17	.72	1	Je	16	.25	2	Jl	15	.78	4	Au	14						
4584	1540	1405	27M .7190	10.8369	6.430	1483	4	2	Ap	7	.56	4	My	7	.09	5	Je	5	.62	7	Jl	5	.15	1	Au	3						
4585	1541	1406	26M .9777	29.4758	4.563	1484	5	1	Ap	25	.46	2	My	24	.99	4	Je	23	.52	6	Jl	23	.05	7	Au	21						
4586	1542	1407	27M .2365	18.5841	0.720	1485	7	5	Ap	14	.83	7	My	14	.36	1	Je	12	.89	3	Jl	12	.42	4	Au	10						
4587	1543	1408	27M .4952	7.6924	24.432	1486	1	3	Ap	4	.19	4	My	3	.72	6	Je	2	.25	7	Jl	1	.78	3	Au	29						
4588	1544	1409	27M .7540	26.3313	22.565	1487	2	2	Ap	23	.09	3	My	22	.62	5	Je	21	.15	6	Jl	20	.68	1	Au	19						
4589	1545	1410	27M .0127	15.4396	18.722	1488	3	6	Ap	11	.46	7	My	10	.99	2	Je	9	.52	4	Jl	9	.05	5	Au	7						
4590	1546	1411	27M .2715	4.5479	14.880	1489	5	3	Mr	31	.82	5	Ap	30	.35	6	My	29	.88	2	Jl	27	.95	4	Au	26						
4591	1547	1412	27M .5303	23.1868	13.013	1490	6	2	Ap	19	.72	4	My	19	.25	5	Je	17	.78	7	Jl	17	.31	1	Au	15						
4592	1548	1413	27M .7890	12.2951	9.173	1491	7	7	Ap	9	.09	1	My	8	.62	3	Je	7	.15	4	Jl	6	.68	6	Au	5						
4593	1549	1414	27M .0478	1.4034	5.327	1492	1	4	Mr	28	.46	7	My	26	.52	2	Je	25	.05	3	Jl	24	.58	5	Au	23						
4594	1550	1415	27M .3065	20.0423	3.461	1493	3	3	Ap	16	.35	4	My	15	.88	6	Je	14	.41	7	Jl	13	.94	2	Au	12						
4595	1551	1416	27M .5653	9.1506	27.173	1494	4	7	Ap	5	.72	2	My	5	.25	3	Je	3	.78	5	Jl	3	.31	6	Au	1						
4596	1552	1417	27M .8240	27.7894	25.306	1495	5	6	Ap	24	.62	1	My	24	.15	2	Je	22	.68	4	Jl	22	.21	5	Au	20						
4597	1553	1418	27M .0828	16.8977	21.463	1496	6	3	Ap	12	.98	5	My	12	.52	7	Je	11	.05	1	Jl	10	.58	3	Au	9						
4598	1554	1419	27M .3415	6.0060	17.620	1497	1	1	Ap	2	.35	2	My	1	.88	4	My	31	.41	5	Je	29	.94	2	Au	28						
4599	1555	1420	27M .6003	24.6449	15.754	1498	2	7	Ap	21	.25	1	My	20	.78	3	Je	19	.31	4	Jl	18	.84	6	Au	17						
4600	1556	1421	27M .8591	13.7532	11.911	1499	3	4	Ap	10	.62	6	My	10	.15	7	Je	8	.68	2	Jl	8	.21	3	Au	6						
4601	1557	1422	27M .1178	2.8615	8.068	1500	4	1	Mr	29	.98	3	Ap	28	.51	6	Je	26	.57	1	Jl	26	.10	2	Au	24						
4602	1558	1423	27M .3766	21.5004	6.201	1501	6	7	Ap	17	.88	2	My	17	.41	3	Je	15	.94	5	Jl	15	.47	7	Au	14						
4603	1559	1424	27M .6353	10.6087	2.359	1502	7	5	Ap	7	.24	6	My	6	.77	1	Je	5	.30	2	Jl	4	.84	4	Au	3						
4604	1560	1425	27M .8941	29.2476	0.492	1503	1	4	Ap	26	.14	5	My	25	.67	7	Je	24	.20	1	Jl	23	.73	3	Au	22						
4605	1561	1426	27M .1528	18.3559	24.204	1504	2	1	Ap	14	.51	3	My	14	.04	4	Je	12	.57	6	Jl	12	.10	7	Au	10						
4606	1562	1427	27M .4116	7.4642	20.361	1505	4	5	Ap	3	.88	7	My	3	.41	1	Je	1	.94	3	Jl	1	.47	6	Au	29						

Surya Siddhanta.

+ 147.65293	+ 177.18353	+ 206.71411	+ 236.24470	+ 265.77529	+ 295.30588	{ 324.83647 354.36705 21.736 23.712		
+ 9.880	+ 11.856	+ 13.832	+ 15.808	+ 17.784	+ 19.760			
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalgun	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction
2 S 28 .69	4 O 28 .22	5 N 26 .75	7 D 26 .28	68	1 Jr 24○ .81		3 F 23 .34	4 Mr 23 .87
7 S 17 .05	1 O 16 .58	3 N 15 .11	4 D 14 .64	69	6 Jr 13○ .17		7 F 11 .70	2 Mr 13 .23
4 S 6 .42	5 O 5 .95	7 N 4 .48	2 D 4 .01	70	3 Jr 2○ .54		5 F 1 .07	6 Mr 2 .60
3 S 25 .32	4 O 24 .85	6 N 23 .38	7 D 22 .91	71	2 Jr 21 .44		3 F 19 .97	5 Mr 21 .50
7 S 14 .69	2 O 14 .22	3 N 12○ .75	5 D 12 .28	72	6 Jr 10 .81		1 F 9 .34	2 Mr 9 .87
5 S 3 .05	6 O 2 .58	1 N 1○ .11	2 N 30 .64		4 D 30 .17	73	5 Jr 28 .70	7 F 27 .23
3 S 21 .95	5 O 21○ .48	7 N 20 .01	1 D 19 .54	74	3 Jr 18 .07		4 F 16 .60	6 Mr 18 .13
1 S 11 .32	2 O 10● .85	4 N 9 .38	5 D 8 .91	75	7 Jr 7 .44		1 F 5 .97	3 Mr 7○ .50
5 Au 31○ .68	1 O 29 .74	3 N 28 .27	4 D 27 .81		Magha	76	6 Jr 26 .33	2 Mr 25 .39
7 S 30● .21					Kshaya		7 F 24○ .86	
4 S 18 .58	6 O 18 .11	7 N 16 .64	2 D 16 .17	77	3 Jr 15 .70		5 F 13 .23	6 Mr 14 .76
1 S 7 .95	3 O 7 .48	5 N 6 .01	6 D 5 .54	78	1 Jr 4 .07		2 F 2 .60	4 Mr 4 .13
7 S 26 .84	2 O 26 .37	3 N 24 .90	5 D 24○ .43	79	6 Jr 22 .96		1 F 21 .49	3 Mr 23 .02
5 S 16 .21	6 O 15 .74	1 N 14 .27	2 D 13○ .80	80	4 Jr 12 .33		5 F 10 .86	7 Mr 11 .39
2 S 4 .58	4 O 4 .11	5 N 2 .64	7 D 2 .17		1 D 31 .70	81	3 Jr 30 .23	4 F 28 .76
3 S 23 .48	3 O 23 .01	4 N 21● .54	6 D 21 .07	82	7 Jr 19 .60		2 F 18 .13	3 Mr 19 .66
5 S 12 .85	7 O 12○ .38	1 N 10● .91	3 D 10 .44	83	4 Jr 8 .97		6 F 7 .50	1 Mr 6 .03
3 S 2 .21	4 O 1○ .74	6 O 31 .27	7 N 29 .80		2 D 29 .33	84	3 Jr 27 .86	5 F 26 .39
							6 Mr 26 .92	
2 S 20●○ .11	3 O 19 .64	5 N 18 .17	6 D 17 .70	85	1 Jr 16 .23		2 F 14 .76	4 Mr 16 .29
3 S 9● .48	1 O 9 .01	2 N 7 .54	4 D 7 .07	86	5 Jr 5 .60		7 F 4○ .13	1 Mr 5● .66
5 S 28 .37	6 O 27 .90	1 N 26 .43	2 D 25 .96	87	4 Jr 24○ .49		6 F 23 .02	7 Mr 24 .55
2 S 17 .74	4 O 17 .27	5 N 15 .80	7 D 15 .33	88	1 Jr 13○ .86		3 F 12 .39	4 Mr 12 .92
7 S 6 .11	1 O 5 .64	3 N 4 .17	4 D 3 .70	89	6 Jr 2 .23		7 Jr 31 .76	2 Mr 2 .29
6 S 25 .00	7 O 24 .53	2 N 23○ .06	3 D 22● .59	90	5 Jr 21 .12		6 F 19 .65	1 Mr 21 .19
3 S 14 .37	4 O 13 .90	6 N 12○ .43	7 D 11 .96	91	2 Jr 10 .49		4 F 9 .02	5 Mr 10 .55
7 S 3 .74	2 O 3 .27	3 N 1●○ .80	5 D 1 .33		6 D 30 .86	92	1 Jr 29 .39	2 F 27 .92
6 S 21 .64	1 O 21● .17	2 N 19 .70	4 D 19 .23	93	5 Jr 17 .76		7 F 16 .29	1 Mr 17○ .82
4 S 11○ .00	5 O 10 .53	7 N 9 .06	1 D 8 .59	94	3 Jr 7 .12		4 F 5 .65	6 Mr 7○ .18
2 S 29 .90	4 O 29 .43	5 N 27 .96	7 D 27 .49	95	2 Jr 26 .03		3 F 24● .56	5 Mr 26 .09
7 S 19 .27	1 O 18 .80	3 N 17 .33	4 D 16 .86	96	6 Jr 15○ .39		7 F 13● .92	2 Mr 14 .45
5 S 7 .64	6 O 7 .17	7 N 5 .70	2 D 5 .23	97	3 Jr 3○ .76		5 F 2 .29	6 Mr 3 .82
3 S 26 .54	5 O 26 .07	6 N 24 .60	1 D 24○ .13	98	2 Jr 22 .66		4 F 21 .19	5 Mr 22 .72
7 S 15 .90	2 O 15 .43	3 N 13 .96	5 D 13● .49	99	7 Jr 12 .02		1 F 10 .55	3 Mr 12 .09
6 S 5 .27	6 O 4 .80	1 N 3 .33	2 D 2 .86	15	4 Jr 1 .39	00	5 Jr 30 .92	7 F 29 .45
3 S 23 .16	5 O 22○ .69	7 N 21 .22	1 D 20 .75	01	3 Jr 19 .28		4 F 17 .81	6 Mr 19 .34
5 S 12 .53	3 O 12●○ .06	4 N 10 .59	6 D 10 .12	02	7 Jr 8 .65		2 F 7 .18	3 Mr 8 .71
3 S 1 .89	7 O 1●○ .42	1 O 30 .95	3 N 29 .48		5 D 29 .01	03	6 Jr 27 .54	1 F 26 .07
							2 Mr 27● .61	
5 S 20● .79	6 O 20 .32	7 N 18 .85	2 D 18 .38	04	3 Jr 16 .91		5 F 15○ .44	6 Mr 15 .97
3 S 9 .16	3 O 8 .69	5 N 7 .22	6 D 6 .75	05	1 Jr 5 .28		2 F 3○ .81	4 Mr 5 .34
5 S 28 .06	2 O 27 .59	4 N 26 .12	5 D 25 .65	06	7 Jr 24●○ .13		1 F 22 .71	3 Mr 24 .24

TABLE X-

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A. D.	Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom.col. 6 + 29.53059					☾'s Anom.col. 7 + 1.976					+ 59.06117					+ 88.59176					+ 118.12235						
										Vaisakha					Jyeshtha					Ashada					Sravana					Bhadrapada						
										Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction			
4607	1563	1428	27M	•6704	26.1031	18.494	1506	5	4	Ap	22	•77	6	Mv	22	•30	7	Je	20	•83	2	Jl	20●	•36	3	Au	13	•00	3	Au	13	•00	3	Au	13	•00
4608	1564	1429	27M	•9291	15.2114	14.651	1507	6	2	Ap	12	•14	3	My	11	•67	5	Je	10○	•20	6	Jl	9●	•73	1	Au	8	•00	1	Au	8	•00	1	Au	8	•00
4609	1565	1430	27M	•1879	4.3197	10.809	1508	7	6	Mr	31	•51	1	Ap	30	•04	2	Mv	29○	•57	5	Jl	27	•63	7	Au	26	•00	7	Au	26	•00	7	Au	26	•00
4610	1566	1431	27M	•4466	22.9586	8.942	1509	2	5	Ap	19	•40	6	Mv	18○	•94	1	Je	17	•47	3	Jl	17	•00	4	Au	15	•00	4	Au	15	•00	4	Au	15	•00
4611	1567	1432	27M	•7054	12.0669	5.099	1510	3	2	Ap	8	•77	4	Mv	8●	•30	5	Je	6	•83	7	Jl	6	•36	1	Au	4	•00	1	Au	4	•00	1	Au	4	•00
4612	1568	1433	27M	•9641	1.1752	1.256	1511	4	7	Mr	29○	•14	3	My	27	•20	4	Je	25	•73	6	Jl	25	•26	7	Au	23	•00	7	Au	23	•00	7	Au	23	•00
4613	1569	1434	27M	•2229	19.8141	26.944	1512	5	6	Ap	16	•04	7	Mv	15	•57	2	Je	14	•10	3	Jl	13	•63	5	Au	12	•00	5	Au	12	•00	5	Au	12	•00
4614	1570	1435	27M	•4816	8.9224	23.101	1513	7	3	Ap	5	•40	4	My	4	•93	6	Je	3	•46	1	Jl	3	•00	2	Au	1	•00	2	Au	1	•00	2	Au	1	•00
4615	1571	1436	27M	•7404	27.5612	21.235	1514	1	2	Ap	24	•30	3	Mv	23	•83	5	Je	22	•36	6	Jl	21	•89	1	Au	20●	•00	1	Au	20●	•00	1	Au	20●	•00
4616	1572	1437	27M	•9992	16.6695	17.392	1515	2	6	Ap	13	•67	1	My	13	•20	2	Je	11	•73	4	Jl	11○	•26	5	Au	9	•00	5	Au	9	•00	5	Au	9	•00
4617	1573	1438	27M	•2579	5.7778	13.549	1516	3	4	Ap	2	•04	5	My	1	•57	7	My	31	•10	1	Je	29○	•63	4	Au	27	•00	4	Au	27	•00	4	Au	27	•00
4618	1574	1439	27M	•5167	24.4167	11.682	1517	5	2	Ap	20	•93	4	Mv	20	•46	5	Je	18●	•99	7	Jl	18	•52	2	Au	17	•00	2	Au	17	•00	2	Au	17	•00
4619	1575	1440	27M	•7754	13.5250	7.840	1518	6	7	Ap	10	•30	1	My	9○	•82	3	Je	8●	•36	4	Jl	7	•89	6	Au	6	•00	6	Au	6	•00	6	Au	6	•00
4620	1576	1441	27M	•0342	2.6333	3.997	1519	7	4	Mr	30	•67	6	Ap	29○	•20	2	Je	27	•26	3	Jl	26	•79	5	Au	25	•00	5	Au	25	•00	5	Au	25	•00
4621	1577	1442	27M	•2929	21.2722	2.130	1520	1	3	Ap	17○	•56	5	My	17	•10	6	Je	15	•63	1	Jl	15	•16	2	Au	13	•00	2	Au	13	•00	2	Au	13	•00
4622	1578	1443	27M	•5517	10.3805	25.842	1521	3	7	Ap	6●	•93	2	Mv	6	•46	3	Je	4	•99	5	Jl	4	•52	7	Au	3	•00	7	Au	3	•00	7	Au	3	•00
4623	1579	1444	27M	•8105	29.0194	23.975	1522	4	5	Mr	27	•30	1	My	25	•36	2	Je	20	•89	4	Jl	23	•42	5	Au	21○	•00	5	Au	21○	•00	5	Au	21○	•00
4624	1580	1445	27M	•0692	18.1277	20.133	1523	5	4	Ap	15	•20	5	My	14	•73	7	Je	13	•26	1	Jl	12	•79	3	Au	11○	•00	3	Au	11○	•00	3	Au	11○	•00
4625	1581	1446	27M	•3280	7.2360	16.290	1524	6	1	Ap	3	•56	3	My	3	•09	4	Je	1	•62	6	Jl	1	•16	7	Jl	30	•00	7	Jl	30	•00	7	Jl	30	•00
4626	1582	1447	27M	•5867	25.8749	14.423	1525	1	7	Ap	22	•46	2	My	22	•00	3	Je	20○	•52	5	Jl	20	•05	6	Au	18	•00	6	Au	18	•00	6	Au	18	•00
4627	1583	1448	27M	•8455	14.9832	10.580	1526	2	4	Ap	11	•83	6	My	11	•36	7	Je	9○	•89	2	Jl	9	•42	3	Au	7	•00	3	Au	7	•00	3	Au	7	•00
4628	1584	1449	28M	•1042	4.0915	6.738	1527	3	2	Ap	1	•20	3	Ap	30	•73	5	My	30●○	•26	1	Jl	28	•32	2	Au	26	•00	2	Au	26	•00	2	Au	26	•00
4629	1585	1450	27M	•3630	22.7304	4.871	1528	4	1	Ap	19	•09	2	Mv	18●	•62	4	Je	17	•15	5	Jl	16	•68	7	Au	15	•00	7	Au	15	•00	7	Au	15	•00
4630	1586	1451	27M	•6218	11.8387	1.028	1529	6	5	Ap	8○	•46	6	Mv	7	•99	1	Je	6	•52	3	Jl	6	•05	4	Au	4	•00	4	Au	4	•00	4	Au	4	•00
4631	1587	1452	27M	•8805	0.9470	24.740	1530	7	2	Mr	28●○	•83	5	My	26	•89	7	Je	25	•42	1	Jl	24	•95	3	Au	23	•00	3	Au	23	•00	3	Au	23	•00
4632	1588	1453	28M	•1393	19.5858	22.873	1531	1	1	Ap	16	•72	3	My	16	•26	4	Je	14	•79	6	Jl	14	•32	7	Au	12	•00	7	Au	12	•00	7	Au	12	•00
4633	1589	1454	27M	•3980	8.6941	19.030	1532	2	6	Ap	5	•09	7	My	4	•62	2	Je	3	•15	3	Jl	2	•68	5	Au	1	•00	5	Au	1	•00	5	Au	1	•00
4634	1590	1455	27M	•6568	27.3330	17.165	1533	4	4	Ap	22	•99	6	Mv	23	•52	1	Je	22	•05	2	Jl	21○	•58	4	Au	20●	•00	4	Au	20●	•00	4	Au	20●	•00
4635	1591	1456	27M	•9155	16.4413	13.321	1534	5	2	Ap	13	•36	3	My	12	•89	5	Je	11	•42	6	Jl	10○	•95	1	Au	9	•00	1	Au	9	•00	1	Au	9	•00
4636	1592	1457	28M	•1743	5.5496	9.478	1535	6	6	Ap	2	•72	1	My	2	•25	2	My	31	•78	4	Jl	30●	•32	7	Au	28	•00	7	Au	28	•00	7	Au	28	•00
4637	1593	1458	27M	•4330	24.1885	7.611	1536	7	5	Ap	20	•62	7	Mv	20○	•15	1	Je	18	•68	3	Jl	18●	•21	4	Au	16	•00	4	Au	16	•00	4	Au	16	•00
4638	1594	1459	27M	•6918	13.2968	3.769	1537	2	2	Ap	9	•99	4	Mv	9○	•52	6	Je	8	•05	7	Jl	7	•58	2	Au	6	•00	2	Au	6	•00	2	Au	6	•00
4639	1595	1460	27M	•9506	2.4057	27.481	1538	3	7	Mr	30	•36	1	Ap	28○	•89	4	Je	26	•95	6	Jl	26	•48	1	Au	25	•00	1	Au	25	•00	1	Au	25	•00
4640	1596	1461	28M	•2093	21.0440	25.614	1539	4	6	Ap	18	•25	7	Mv	17	•78	2	Je	16	•31	3	Jl	15	•84	5	Au	14	•00	5	Au	14	•00	5	Au	14	•00
4641	1597	1462	27M	•4681	10.1523	21.771	1540	5	3	Ap	6●	•62	5	My	6	•15	6	Je	4	•68	1	Jl	4	•21	2	Au	2	•00	2	Au	2	•00	2	Au	2	•00
4642	1598	1463	27M	•7268	28.7912	19.904	1541	7	2	Ap	25	•52	4	Mv	25	•05	5	Je	23	•58	7	Jl	23	•11	1	Au	21○	•00	1	Au	21○	•00	1	Au	21○	•00
4643	1599	1464	27M	•9856	17.8995	16.062	1542	1	6	Ap	14	•88	1	My																						

147-65293	+ 177-18353	+ 206-71411	+ 236-24470	+ 265-77529	+ 295-30588	+ 324-83647	+ 354-36705	+ 21-736	+ 23-712														
9-880	+ 11-856	+ 13-832	+ 15-808	+ 17-784	+ 19-760																		
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra															
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day				
S	17	·43	6 O	16	·96	1 N	15	·49	3 D	15	·02	07	4 Jr	13●	·55		6 F	12	·08	7 Mr	13	·61	
S	6	·79	4 O	6	·32	5 N	4	·85	7 D	4○	·38	08	1 Jr	2	·92		3 F	1	·45	4 Mr	1	·98	
S	24	·69	3 O	24	·22	4 N	22○	·75	6 D	22	·28	09	7 Jr	20	·81		2 F	19	·34	3 Mr	20	·87	
S	14	·06	7 O	13	·59	2 N	12●○	·12	3 D	11	·65	10	5 Jr	10	·18		6 F	8	·71	1 Mr	10	·24	
S	3	·42	4 O	2	·96	6 N	1	·49	1 D	1	·02		2 D	30	·55	11	4 Jr	29	·08	5 F	27	·61	
S	22○	·32	3 O	21	·85	5 N	20	·38	6 D	19	·91	12	1 Jr	18	·44		2 F	16	·98	4 Mr	17○	·61	
S	10○	·69	1 O	10	·22	2 N	8	·75	4 D	8	·28	13	5 Jr	6	·81		7 F	5	·34	1 Mr	6●○	·87	
S	29	·59	7 O	29	·12	1 N	27	·65	3 D	27	·18	14	4 Jr	25○	·71		6 F	24	·24	7 Mr	25	·77	
S	18	·95	4 O	18	·48	6 N	17	·02	7 D	16	·55	15	2 Jr	15○	·08		3 F	13	·61	5 Mr	15	·14	
S	8	·32	1 O	7	·85	3 N	6	·38	4 D	5	·91	16	6 Jr	4●○	·44		7 F	2	·97	2 Mr	3	·50	
S	26	·22	7 O	25	·75	2 N	24	·28	3 D	23	·81	17	5 Jr	22	·34		6 F	20	·87	1 Mr	22	·40	
S	15	·57	5 O	15	·12	6 N	13	·65	1 D	13●	·18	18	2 Jr	11	·71		4 F	10	·24	5 Mr	11	·77	
S	4	·95	2 O	4	·48	4 N	3○	·01	5 D	2	·54	19	7 Jr	1	·08		1 Jr	30	·61	3 Mr	1	·14	
S	23	·85	1 O	23○	·38	2 N	21	·91	4 D	21	·44	20	5 Jr	19	·97		7 F	18	·50	2 Mr	19	·03	
S	12	·22	5 O	11○	·75	7 N	10	·28	1 D	9	·81	21	3 Jr	8	·34		4 F	6	·87	6 Mr	8	·40	
S	1	·58	3 O	1	·12	Margasira Kshaya				6 N	29	·18		7 D	28	·71	22	2 Jr	27	·24	3 F	25○	·77
S	20	·48	2 O	20	·01	3 N	18	·54	5 D	18	·07	23	6 Jr	16	·60		1 F	15○	·14	2 Mr	16	·67	
S	9	·85	6 O	9	·38	7 N	7	·91	2 D	7	·44	24	3 Jr	5	·97		5 F	4○	·50	7 Mr	5	·03	
S	27	·75	5 O	27	·28	6 N	25	·81	1 D	25	·34	25	2 Jr	23	·87		4 F	22	·40	5 Mr	23	·93	
S	17	·11	2 O	16	·64	4 N	15	·18	5 D	14○	·71	26	7 Jr	13●	·24		1 F	11	·77	3 Mr	13	·30	
S	6	·48	7 O	6	·01	1 N	4	·54	3 D	4○	·07	27	4 Jr	2	·60		6 F	1	·13	7 Mr	2	·66	
S	25	·38	5 O	24	·91	7 N	23○	·44	1 D	22	·97	28	3 Jr	21	·50		5 F	20	·03	6 Mr	20	·56	
S	13	·75	3 O	13	·28	4 N	11●	·81	6 D	11	·34	29	7 Jr	9	·87		2 F	8	·40	3 Mr	9	·93	
S	3	·11	7 O	2○	·64	2 N	1●	·17	3 N	30	·70		5 D	30	·24	30	6 Jr	28	·77	1 F	27	·30	
S	22○	·01	6 O	21	·54	1 N	20	·07	2 D	19	·60	31	4 Jr	18	·13		5 F	16	·66	7 Mr	18○	·19	
S	11○	·38	3 O	10	·91	5 N	9	·44	6 D	8	·97	32	1 Jr	7	·50		3 F	6	·03	4 Mr	6	·56	
S	29	·28	2 O	28	·81	4 N	27	·34	5 D	26	·87	33	7 Jr	25○	·40		1 F	23	·93	3 Mr	25	·46	
S	18	·64	7 O	18	·17	1 N	16	·70	3 D	16	·23	34	4 Jr	14○	·76		6 F	13	·30	7 Mr	14	·83	
S	8	·01	4 O	7	·54	6 N	6	·07	7 D	5	·60	35	2 Jr	4	·13		3 F	2	·86	5 Mr	4	·19	
S	26	·91	3 O	26	·44	4 N	24	·97	6 D	24	·50	36	1 Jr	23	·03		2 F	21	·56	4 Mr	22	·09	
S	15	·27	7 O	14	·80	2 N	13○	·34	3 D	12	·87	37	5 Jr	11	·40		6 F	9	·93	1 Mr	11	·46	
S	4	·64	5 O	4	·17	6 N	2○	·70	1 D	2	·23		2 D	31	·76	38	4 Jr	30	·29	5 F	28	·82	
S	23	·54	4 O	23○	·07	5 N	21	·60	7 D	21	·13	39	1 Jr	19	·66		3 F	18	·19	4 Mr	19	·72	
S	12	·91	1 O	12●	·44	2 N	10	·97	4 D	10	·50	40	6 Jr	9	·03		7 F	7	·56	2 Mr	8○	·09	
S	1○	·27	7 O	30	·33	1 N	28	·86	Pausha Kshaya					3 D	28	·40	41	4 Jr	26	·93	6 F	25○	·46
S	30	·80																		7 Mr	26	·99	
S	20	·17	4 O	19	·70	6 N	18	·23	7 D	17	·76	42	2 Jr	16	·29		3 F	14○	·82	5 Mr	16	·35	
S	9	·54	2 O	9	·07	3 N	7	·60	5 D	7	·13	43	6 Jr	5	·66		1 F	4	·19	2 Mr	5	·72	
S	28	·44	7 O	27	·97	2 N	26	·50	4 D	26○	·03	44	5 Jr	24●	·56		7 F	23	·09	1 Mr	23	·62	

Kaliyuga.	Vikrama Era.	Saka Era.	Month and day A. D.	Com- mence- ment of Solar Year. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	Vaisakha			Jyeshtha			Ashada			Sravana			Bhadrapada						
									Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day				
4645	1601	1466	27M	·5031	25·6467	10·352	1544	3	3	Ap	22	·15	4	My	21	·68	6	Je	20	·21	7	Jl	19	·74	2	Au	18
4646	1602	1467	27M	·7619	14·7550	6·509	1545	5	7	Ap	11	·52	2	My	11	·05	3	Je	9	·58	5	Jl	9	·11	6	Au	7
4647	1603	1468	28M	·0206	3·8633	2·667	1546	6	4	Mr	31	·88	6	Ap	30	·41	7	My	29	·94	4	Jl	28	·01	5	Au	26
4648	1604	1469	28M	·2794	22·5022	0·800	1547	7	3	Ap	19	·78	5	My	19	·31	6	Je	17	·84	1	Jl	17	·37	2	Au	15
4649	1605	1470	27M	·5381	11·6105	24·512	1548	1	1	Ap	8	·15	2	My	7	·68	4	Je	6	·21	5	Jl	5	·74	7	Au	4
4650	1606	1471	27M	·7969	0·7188	20·669	1549	3	5	Mr	23	·52	1	My	26	·58	3	Je	26	·11	4	Jl	24	·64	6	Au	23
4651	1607	1472	28M	·0556	19·3576	18·802	1550	4	4	Ap	16	·41	5	My	15	·94	7	Je	14	·47	2	Jl	14	·00	3	Au	12
4652	1608	1473	28M	·3144	8·4659	14·959	1551	5	1	Ap	5	·78	3	My	5	·31	4	Je	3	·84	6	Jl	3	·37	7	Au	10
4653	1609	1474	27M	·5732	27·1048	13·093	1552	6	7	Ap	23	·68	2	My	23	·21	3	Je	21	·74	5	Jl	21	·27	6	Au	19
4654	1610	1475	27M	·8319	16·2131	9·250	1553	1	5	Ap	13	·04	6	My	12	·58	1	Je	11	·11	2	Jl	10	·64	4	Au	9
4655	1611	1476	28M	·0907	5·3214	5·407	1554	2	1	Ap	2	·41	3	My	1	·94	5	My	31	·47	1	Jl	29	·54	3	Au	28
4656	1612	1477	28M	·3494	23·9603	3·540	1555	3	1	Ap	21	·31	2	My	20	·84	4	Je	19	·37	5	Jl	18	·90	7	Au	17
4657	1613	1478	27M	·6082	13·0686	27·253	1556	4	5	Ap	9	·68	7	My	9	·21	1	Je	7	·74	3	Jl	7	·27	4	Au	5
4658	1614	1479	27M	·8669	2·1769	23·410	1557	6	3	Mr	30	·04	4	Ap	28	·57	7	Je	26	·64	2	Jl	26	·17	3	Au	28
4659	1615	1480	28M	·1257	20·8158	21·543	1558	7	1	Ap	17	·94	3	My	17	·47	5	Je	16	·00	6	Jl	15	·53	1	Au	14
4660	1616	1481	28M	·3844	9·9241	17·700	1559	1	6	Ap	7	·31	7	My	6	·84	2	Je	5	·37	3	Jl	4	·90	5	Au	3
4661	1617	1482	27M	·6432	28·5630	15·833	1560	2	5	Ap	25	·21	6	My	24	·74	1	Je	23	·27	2	Jl	22	·80	4	Au	21
4662	1618	1483	27M	·9020	17·6713	11·991	1561	4	2	Ap	14	·57	4	My	14	·10	5	Je	12	·63	7	Jl	12	·16	1	Au	10
4663	1619	1484	28M	·1607	6·7796	8·148	1562	5	6	Ap	3	·94	1	My	3	·47	3	Je	2	·00	4	Jl	10	·53	7	Au	29
4664	1620	1485	28M	·4195	25·4185	6·281	1563	6	5	Ap	22	·84	7	My	22	·37	1	Je	20	·90	3	Jl	20	·43	4	Au	18
4665	1621	1486	27M	·6782	14·5268	2·438	1564	7	3	Ap	11	·20	4	My	10	·73	6	Je	9	·27	7	Jl	8	·80	2	Au	7
4666	1622	1487	27M	·9370	3·6351	26·150	1565	2	7	Mr	31	·57	2	Ap	30	·10	3	My	29	·63	6	Jl	27	·69	1	Au	26
4667	1623	1488	28M	·1957	22·2740	24·283	1566	3	6	Ap	19	·47	1	My	19	·00	2	Je	17	·53	4	Jl	17	·06	5	Au	15
4668	1624	1489	28M	·4545	11·3822	20·440	1567	4	3	Ap	8	·84	5	My	8	·37	6	Je	6	·90	1	Jl	6	·43	2	Au	4
4669	1625	1490	27M	·7133	0·4905	16·598	1568	5	1	Mr	28	·20	4	My	26	·26	5	Je	24	·79	7	Jl	24	·33	1	Au	22
4670	1626	1491	27M	·9720	19·1294	14·731	1569	7	7	Ap	16	·10	1	My	15	·63	3	Je	14	·16	4	Jl	13	·69	6	Au	12
4671	1627	1492	28M	·2308	8·2377	10·888	1570	1	4	Ap	5	·47	6	My	5	·00	7	Je	3	·53	2	Jl	3	·06	3	Au	10
4672	1628	1493	28M	·4895	26·8766	9·022	1571	2	3	Ap	24	·37	4	My	23	·90	6	Je	22	·43	7	Jl	21	·96	2	Au	20
4673	1629	1494	27M	·7483	15·9849	5·179	1572	3	7	Ap	12	·73	2	My	12	·26	3	Je	10	·79	5	Jl	10	·32	6	Au	8
4674	1630	1495	28M	·0070	5·0932	1·336	1573	5	5	Ap	2	·10	6	My	1	·63	1	My	31	·16	4	Jl	29	·22	5	Au	27
4675	1631	1496	28M	·2658	23·7321	27·024	1574	6	4	Ap	21	·00	5	My	20	·53	7	Je	19	·06	1	Jl	18	·59	3	Au	17
4676	1632	1497	28M	·5246	12·8404	23·181	1575	7	1	Ap	10	·36	2	My	9	·89	4	Je	8	·42	5	Jl	7	·95	7	Au	6
4677	1633	1498	27M	·7833	1·9487	19·339	1576	1	5	Mr	29	·73	7	Ap	28	·26	3	Je	26	·32	4	Jl	25	·85	6	Au	24
4678	1634	1499	28M	·0421	20·5876	17·472	1577	3	4	Ap	17	·63	6	My	17	·16	7	Je	15	·69	2	Jl	15	·22	3	Au	13
4679	1635	1500	28M	·3008	9·6959	13·629	1578	4	2	Ap	7	·00	3	My	6	·53	5	Je	5	·06	6	Jl	4	·59	1	Au	3
4680	1636	1501	28M	·5596	28·3848	11·762	1579	5	7	Ap	25	·89	2	My	25	·42	3	Je	23	·95	5	Jl	23	·49	7	Au	22
4681	1637	1502	27M	·8183	17·4431	7·919	1580	6	5	Ap	14	·26	6	My	13	·79	1	Je	12	·32	2	Jl	11	·85	4	Au	10
4682	1638	1503	28M	·0771	6·5514	4·077	1581	1	2	Ap	3	·63	4	My	3	·16	5	Je	1	·69	7	Jl	10	·22	3	Au	29
4683	1639	1504	28M	·3368	25·1903	2·210	1582	2	1	Ap	22	·53	3	My	22	·06	4	Je	20	·59	6	Jl	20	·12	7	Au	18

Surya Siddhanta.

147·65293	+ 177·18353	+ 206·71411	+ 236·24470		+ 265·77529	+ 295·30588	{ +324·83647 +354·86705 + 21·736 + 23·712							
+ 9·880	+ 11·856	+ 13·832	+ 15·808		+ 17·784	+ 19·760								
Asvina	Kartika		Margasira		Pausha		A.D.	Magha		A.D.	Phalguna		Chaitra	
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
S 16	·80	5 O	16	·33	6 N	14	·86	1 D	14○	·39	45	2 Jr	12	·92
S 6	·17	2 O	5	·70	4 N	4	·23	5 D	3●	·76	46	7 Jr	2	·29
S 25	·07	1 O	24	·60	3 N	23●	·13	4 D	22	·66	47	6 Jr	21	·19
S 14	·43	5 O	13○	·96	7 N	12	·49	2 D	12	·02	48	3 Jr	10	·55
S 2	·80	3 O	2○	·33	4 O	31	·86	6 N	30	·39		7 D	29	·92
S 21●	·70	2 O	31	·23	3 N	19	·76	5 D	19	·29	50	6 Jr	17	·82
S 11	·07	6 O	10	·60	1 N	9	·13	2 D	8	·66	51	4 Jr	7	·19
S 29	·96	5 O	29	·49	7 N	28	·02	1 D	27	·55	52	3 Jr	26○	·08
S 18	·33	2 O	17	·86	4 N	16	·39	5 D	15	·92	53	7 Jr	14●	·45
S 7	·70	7 O	7	·23	1 N	5	·76	3 D	5	·29	54	4 Jr	3	·82
S 26	·60	6 O	26	·13	7 N	24○	·66	2 D	24	·19	55	3 Jr	22	·72
S 15	·96	3 O	15	·49	5 N	14●○	·02	6 D	13	·55	56	1 Jr	12	·08
S 4	·33	7 O	3	·86	2 N	2●○	·39	3 D	1	·92		5 D	31	·45
S 23	·22	6 O	22●	·76	1 N	21	·29	2 D	20	·82	58	4 Jr	19	·35
S 12○	·59	4 O	12	·12	5 N	10	·65	7 D	10	·18	59	1 Jr	8	·71
S 1○	·96	3 O	31	·02	4 N	29	·55	6 D	29	·08	60	7 Jr	27	·61
O 1	·49													
S 19	·86	7 O	19	·39	1 N	17	·92	3 D	17	·45	61	4 Jr	15	·98
S 9	·22	4 O	8	·75	6 N	7	·28	7 D	6	·81	62	2 Jr	5○	·34
S 28	·12	3 O	27	·65	5 N	26	·18	6 D	25○	·71	63	1 Jr	24	·24
S 17	·49	1 O	17	·02	2 N	15	·55	4 D	15●○	·08	64	5 Jr	13	·61
S 5	·86	5 O	5	·39	6 N	3	·92	1 D	3	·45	65	2 Jr	1	·98
S 24	·75	4 O	24○	·28	5 N	22	·81	7 D	22	·34	66	1 Jr	20	·87
S 14	·12	1 O	13○	·65	3 N	12	·18	4 D	11	·71	67	6 Jr	10	·24
S 3	·49	6 O	3○	·02	7 N	1	·55	2 D	1	·08		3 D	30	·61
S 21●	·38	4 O	20	·91	6 N	19	·44	7 D	18	·97	69	2 Jr	17	·50
S 10	·75	2 O	10	·28	3 N	8	·81	5 D	8	·34	70	6 Jr	6	·87
S 29	·65	1 O	29	·18	2 N	27	·71	4 D	27	·24	71	5 Jr	25	·77
S 19	·02	5 O	18	·55	7 N	17	·08	1 D	16	·61	72	3 Jr	15●	·14
S 7	·38	2 O	6	·91	4 N	5	·44	5 D	4○	·97	73	7 Jr	3	·50
S 26	·28	1 O	25	·81	3 N	24○	·34	4 D	23	·87	74	6 Jr	22	·40
S 15	·65	6 O	15	·18	7 N	13○	·71	2 D	13	·24	75	3 Jr	11	·77
S 5	·01	3 O	4	·54	5 N	3	·07	6 D	2	·60	76	1 Jr	1	·13
S 22○	·91	2 O	22	·44	3 N	20	·97	5 D	20	·50	77	7 Jr	19	·03
S 12○	·28	6 O	11	·81	1 N	10	·34	2 D	9	·87	78	4 Jr	8	·40
S 1○	·65	5 O	30	·71	7 N	29	·24	1 D	28	·77	79	3 Jr	27	·30
O 1	·18													
S 20	·54	3 O	20	·07	4 N	18	·61	6 D	18	·13	80	7 Jr	16○	·66
S 8	·91	7 O	8	·44	1 N	6	·97	3 D	6	·50	81	5 Jr	5○	·03
S 27	·81	6 O	27	·34	7 N	25	·87	2 D	25○	·40	82	3 Jr	23	·93
S 17	·18	3 O	16	·71	5 N	15	·24	6 D	14●	·77	83	1 Jr	13	·30

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.		First New-Moon in Solar Year.	Anomaly of first New-Moon.	A. D.	Week-day of 1st January.	☉'s Anom col. 6	+ 29·59059	+ 59·06117	+ 88·59176	+ 118·1223
									☾'s Anom col. 7	+ 1·976	+ 3·952	+ 5·928	+ 7·904
									Vaisakha	Jyeshtha	Ashada	Shravana	Bhadrapada
			Month and day A. D. Fraction of day.					Week-day Month Day Fraction					
4684	1640	1505	28M ·5946	14·2986	25·922	1583	3	5 Ap 11 ·89	7 My 11○ ·42	1 Je 9 ·95	3 Jl 9 ·48	5 Au 8	
4685	1641	1506	27M ·8534	3·4069	22·079	1584	4	3 Mr 31 ·26	4 Ap 29○ ·79	6 My 29 ·32	2 Jl 27 ·38	3 Au 25	
										7 Je 27 ·85			
4686	1642	1507	28M ·1121	22·0457	20·212	1585	6	2 Ap 19○ ·16	3 My 18 ·69	5 Je 17 ·22	6 Jl 16 ·75	1 Au 15	
4687	1643	1508	28M ·3709	11·1540	16·370	1586	7	6 Ap 8 ·52	1 My 8 ·05	2 Je 6 ·59	4 Jl 6 ·12	5 Au 4	
4688	1644	1509	28M ·6296	0·2623	12·527	1587	1	{ 3 Mr 28 ·89	6 My 26 ·95	1 Je 25 ·48	3 Jl 25 ·01	4 Au 23○	
								5 Ap 27 ·42					
4689	1645	1510	27M ·8884	18·9012	10·660	1588	2	2 Ap 15 ·79	4 My 15 ·32	5 Je 13 ·85	7 Jl 13 ·38	1 Au 11○	
4690	1646	1511	28M ·1471	8·0095	6·817	1589	4	7 Ap 5 ·16	1 My 4 ·69	3 Je 3 ·22	4 Jl 2 ·75	{ 6 Au 1●○	
												7 Au 30	
4691	1647	1512	28M ·4059	26·6484	4·951	1590	5	6 Ap 24 ·05	7 My 23 ·58	2 Je 22○ ·11	3 Jl 21● ·65	5 Au 20	
4692	1648	1513	28M ·6647	15·7567	1·108	1591	6	3 Ap 13 ·42	4 My 12 ·95	6 Je 11○ ·48	1 Jl 11 ·01	2 Au 9	
4693	1649	1514	27M ·9234	4·8650	24·820	1592	7	7 Ap 1 ·79	2 My 1 ·32	{ 3 My 30○ ·85	6 Jl 28 ·91	1 Au 27	
										5 Je 29 ·38			
4694	1650	1515	28M ·1822	23·5039	22·953	1593	2	6 Ap 20 ·69	1 My 20● ·22	2 Je 18 ·75	4 Jl 18 ·28	5 Au 16	
4695	1651	1516	28M ·4409	12·6122	19·110	1594	3	4 Ap 10○ ·05	5 My 9● ·58	7 Je 8 ·11	1 Jl 7 ·64	3 Au 6	
4696	1652	1517	28M ·6997	1·7205	15·268	1595	4	1 Mr 30○ ·42	{ 2 Ap 28 ·95	6 Je 27 ·01	7 Jl 26 ·54	2 Au 25	
									4 My 28 ·48				
4697	1653	1518	27M ·9584	20·3594	13·401	1596	5	7 Ap 17 ·32	1 My 16 ·85	3 Je 15 ·38	4 Jl 14 ·91	6 Au 13	
4698	1654	1519	28M ·2172	9·4677	9·558	1597	7	4 Ap 6 ·68	6 My 6 ·21	7 Je 4 ·75	2 Jl 4 ·28	3 Au 2	
4699	1655	1520	28M ·4759	28·1066	7·691	1598	1	3 Ap 25 ·58	5 My 25 ·11	6 Je 23 ·64	1 Jl 23○ ·17	2 Au 21	
4700	1656	1521	28M ·7347	17·2149	3·848	1599	2	7 Ap 14 ·95	2 My 14 ·48	4 Je 13 ·01	5 Jl 12○ ·54	7 Au 11	
4701	1657	1522	27M ·9935	6·3233	0·128	1600	3	5 Ap 13 ·32	6 My 2 ·85	1 Je 1 ·38	{ 2 Je 30● ·91	5 Au 28	
											4 Jl 30 ·44		
4702	1658	1523	28M ·2522	24·9621	25·816	1601	5	4 Ap 22 ·21	5 My 21○ ·74	7 Je 20● ·27	1 Je 19 ·81	3 Au 18	
4703	1659	1524	28M ·5110	14·0704	21·973	1602	6	1 Ap 11 ·58	3 My 11○ ·11	4 Je 9 ·64	6 Jl 9 ·17	7 Au 7	
4704	1660	1525	28M ·7697	3·1787	18·130	1603	7	5 Mr 31 ·95	7 Ap 30●○ ·48	{ 2 My 30 ·01	5 Jl 28 ·07	6 Au 26	
										3 Je 28 ·54			
4705	1661	1526	28M ·0285	21·8175	16·264	1604	1	4 Ap 18● ·85	6 My 18 ·38	7 Je 16 ·91	2 Jl 16 ·44	3 Au 14	
4706	1662	1527	28M ·2872	10·9258	14·424	1605	3	2 Ap 8● ·21	3 My 7 ·74	5 Je 6 ·27	6 Jl 5 ·80	1 Au 4	
4707	1663	1528	28M ·5460	0·0341	8·578	1606	4	1 Ap 27 ·11	2 My 26 ·64	4 Je 25 ·17	5 Jl 24 ·70	7 Au 23○	
4708	1664	1529	28M ·8048	18·6730	6·711	1607	5	5 Ap 16 ·48	7 My 16 ·01	1 Je 14 ·54	3 Jl 14 ·07	4 Au 12○	
4709	1665	1530	28M ·0635	7·7813	2·868	1608	6	2 Ap 4 ·84	4 My 4 ·37	5 Je 2 ·91	7 Jl 2○ ·44	{ 1 Jl 31	
												3 Au 30	
4710	1666	1531	28M ·3223	26·4202	1·002	1609	1	1 Ap 23 ·74	3 My 23 ·27	4 Je 21○ ·80	6 Jl 21 ·33	7 Au 9	
4711	1667	1532	28M ·5810	15·5285	24·714	1610	2	6 Ap 13 ·11	7 My 12 ·64	2 Je 11●○ ·17	3 Jl 10 ·70	5 Au 9	
4712	1668	1533	28M ·8398	4·6368	20·871	1611	3	3 Ap 2 ·48	5 My 2 ·01	{ 6 My 31 ·54	2 Jl 29 ·60	4 Au 28	
										1 Je 30 ·07			
4713	1669	1534	28M ·0985	23·2757	19·004	1612	4	2 Ap 20○ ·37	3 My 19● ·90	5 Je 18 ·43	6 Jl 17 ·97	1 Au 16	
4714	1670	1535	28M ·3573	12·3840	15·161	1613	6	6 Ap 9○ ·74	1 My 9 ·27	2 Je 7 ·80	4 Jl 7 ·33	5 Au 5	
4715	1671	1536	28M ·6161	1·4923	11·319	1614	7	4 Mr 30○ ·11	{ 5 Ap 28 ·64	1 Je 26 ·70	3 Jl 26 ·23	4 Au 24	
									7 My 28 ·17				
4716	1672	1537	28M ·8748	20·1312	9·452	1615	1	3 Ap 18 ·01	4 My 17 ·54	6 Je 16 ·07	7 Jl 15 ·60	2 Au 14	
4717	1673	1538	28M ·1336	9·2395	5·609	1616	2	7 Ap 6 ·37	1 My 5 ·90	3 Je 4 ·43	4 Jl 3 ·96	6 Au 2○	
4718	1674	1539	28M ·3923	27·8784	3·742	1617	4	6 Ap 25 ·27	7 My 24 ·80	2 Je 23 ·33	3 Jl 22●○ ·86	5 Au 31	
4719	1675	1540	28M ·6511	16·9867	27·454	1618	5	3 Ap 14 ·64	5 My 14 ·17	6 Je 12 ·70	1 Jl 12 ·23	2 Au 10	
4720	1676	1541	28M ·9098	6·0950	23·611	1619	6	1 Ap 4 ·00	2 My 3 ·53	4 Je 2○ ·07	{ 5 Jl 1● ·60	1 Au 29	
											7 Jl 31 ·13		
4721	1677	1542	28M ·1686	24·7338	21·745	1620	7	6 Ap 21 ·90	1 My 21○ ·43	2 Je 19 ·96	4 Jl 19 ·49	6 Au 18	
4722	1678	1543	28M ·4274	13·8421	17·902	1621	2	4 Ap 11 ·27	5 My 10●○ ·80	7 Je 9 ·33	1 Jl 8 ·86	3 Au 7	

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+ 147-65293				+ 177-18353				+ 206-71411				+ 236-24470				+ 265-77529				+ 295-30588				{ +324-83647 +354-36705 +21-736 +23-712											
+ 9-880				+ 11-856				+ 13-832				+ 15-808				+ 17-784				+ 19-760															
Asvina				Kartika				Margasira				Pausha				A.D.				Magha				A.D.				Phalguna				Chaitra			
Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction						
6 S	6		.55	1 O	6		.08	2 N	4		.61	4 D	4		.14	84	5 Jr	2		.67		7 F	1		.20	1 Mr	1		.73						
5 S	24		.44	6 O	23		.97	1 N	22		.50	3 D	22		.03	85	4 Jr	20		.57		6 F	19		.10	7 Mr	20		.63						
2 S	13		.81	4 O	13		.34	5 N	11		.87	7 D	11		.40	88	1 Jr	9		.93		3 F	8		.46	4 Mr	9		.99						
7 S	3		.18	1 O	2		.71	3 N	1		.24	4 N	30		.77		6 D	30		.30	87	7 Jr	28		.83	2 F	27		.36						
6 S	22		.07	7 O	21		.61	2 N	20		.14	3 D	19		.67	83	5 Jr	18		.20		6 F	16		.73	1 Mr	17		.26						
3 S	10		.44	4 O	9		.97	6 N	8		.50	1 D	8		.03	89	2 Jr	6		.56		4 F	5		.09	5 Mr	6		.63						
2 S	29		.34	3 O	23		.87	5 N	27		.40	6 D	26		.93	90	1 Jr	25		.46		2 F	23		.99	4 Mr	25		.52						
6 S	18		.71	1 O	18		.24	2 N	16		.77	4 D	16		.30	91	5 Jr	14		.83		7 F	13		.36	1 Mr	14		.89						
4 S	8		.07	5 O	7		.60	7 N	6		.13	1 D	5		.67	92	3 Jr	4		.20		4 F	2		.73	6 Mr	3		.26						
2 S	25		.97	4 O	25		.50	6 N	24		.03	7 D	23		.56	93	2 Jr	28		.09		3 F	20		.62	5 Mr	22		.15						
7 S	15		.34	1 O	14		.87	3 N	13		.40	4 D	12		.93	94	6 Jr	11		.46		7 F	9		.99	2 Mr	11		.52						
4 S	4		.71	6 O	4		.24	7 N	2		.77	2 D	2		.30		3 D	31		.83	95	5 Jr	30		.36	6 F	28		.89						
3 S	23		.60	5 O	23		.13	6 N	21		.66	1 D	21		.19	96	2 Jr	19		.73		4 F	18		.26	5 Mr	18		.79						
7 S	11		.97	2 O	11		.50	4 N	10		.03	5 D	9		.56	97	7 Jr	8		.09		1 F	6		.62	3 Mr	8		.15						
5 S	1		.34	1 O	30		.40	2 N	28		.93	4 D	28		.46	98	5 Jr	26		.99		7 F	25		.52	2 Mr	27		.05						
6 S	30		.87																																
4 S	20		.23	5 O	19		.77	7 N	18		.30	1 D	17		.83	99	3 Jr	16		.36		4 F	14		.89	6 Mr	16		.42						
1 S	9		.60	3 O	9		.13	4 N	7		.66	6 D	7		.19	16	7 Jr	5		.72	00	2 F	4		.25	3 Mr	4		.79						
7 S	27		.50	2 O	27		.03	3 N	25		.56	5 D	25		.09	01	6 Jr	23		.62		1 F	22		.15	2 Mr	23		.68						
4 S	16		.87	6 O	16		.40	7 N	14		.93	2 D	14		.46	02	3 Jr	12		.99		5 F	11		.52	7 Mr	13		.05						
2 S	6		.23	3 O	5		.76	5 N	4		.29	6 D	3		.83	03	1 Jr	2		.36		2 Jr	31		.89	4 Mr	2		.42						
1 S	25		.13	2 O	24		.66	4 N	23		.19	5 D	22		.72	04	7 Jr	21		.25		1 F	19		.78	3 Mr	20		.31						
5 S	13		.50	7 O	13		.03	1 N	11		.56	3 D	11		.09	05	4 Jr	9		.62		6 F	8		.15	7 Mr	9		.68						
2 S	2		.87	4 O	2		.40	5 O	31		.93	7 N	30		.46		1 D	29		.99	06	3 Jr	28		.52	5 F	27		.08						
1 S	21		.76	3 O	21		.29	4 N	19		.82	6 D	19		.35	07	7 Jr	17		.89		2 F	16		.42	6 Mr	28		.58						
6 S	11		.13	7 O	10		.66	2 N	9		.19	3 D	8		.72	08	5 Jr	7		.25		6 F	5		.78	3 Mr	17		.95						
5 S	29		.03	6 O	28		.56	1 N	27		.09	2 D	26		.62	09	4 Jr	24		.15		5 F	23		.68	7 Mr	25		.21						
2 S	18		.39	3 O	17		.93	5 N	16		.46	6 D	15		.99	10	1 Jr	14		.52		3 F	13		.05	4 Mr	14		.58						
6 S	7		.76	1 O	7		.29	2 N	5		.82	4 D	5		.35	11	5 Jr	3		.88		7 F	2		.41	1 Mr	4		.95						
5 S	26		.66	7 O	26		.19	1 N	24		.72	3 D	24		.25	12	4 Jr	22		.78		6 F	21		.31	7 Mr	21		.84						
3 S	15		.03	4 O	14		.56	6 N	13		.09	7 D	12		.62	13	2 Jr	11		.15		3 F	9		.68	5 Mr	11		.21						
7 S	4		.39	1 O	3		.92	3 N	2		.45	4 D	1		.99		6 D	31		.52	14	1 Jr	30		.05	2 F	28		.58						
6 S	23		.29	7 O	22		.82	2 N	21		.35	3 D	28		.88	15	5 Jr	19		.41		6 F	17		.94	1 Mr	19		.47						
3 S	12		.66	5 O	12		.19	6 N	10		.72	1 D	10		.25	16	2 Jr	8		.78		4 F	7		.31	5 Mr	7		.84						
1 S	1		.03	4 O	30		.09	5 N	28		.62	7 D	28		.15	17	1 Jr	26		.68		3 F	25		.21	4 Mr	26		.74						
2 S	30		.56																																
6 S	19		.92	1 O	19		.45	2 N	17		.98	4 D	17		.51	18	6 Jr	16		.05		7 F	14		.58	2 Mr	14		.11						
4 S	9		.29	5 O	8		.82	7 N	7		.35	1 D	6		.88	19	3 Jr	5		.41		4 F	3		.94	6 Mr	5		.47						
3 S	28		.19	4 O	27		.72	6 N	26		.25	7 D	25		.78	20	2 Jr	24		.31		3 F	22		.84	5 Mr	23		.37						
7 S	16		.55	2 O	16		.09	3 N	14		.62	5 D	14		.15	21	6 Jr	12		.68		1 F	11		.21	2 Mr	12		.74						
4 S	5		.92	6 O	5		.45	7 N	3		.98	2 D	3		.51	22	4 Jr	2		.04		5 Jr	31		.57	7 Mr	2		.11						

TABLE X-

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	☉'s Anom col. 6 + 29°53059					☾'s Anom col. 7 + 1°976					+ 59°06117					+ 88°59176					+ 118°12235																				
								Week-day of 1st January.					Vaisakha.					Jyeshtha.					Ashada					Sravana					Bhadrapada															
								Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction													
4723	1679	1544	28M	·6861	2·9504	14·059	1622	3	1	Mr	31	·64	3	Ap	30	·17	4	My	29	·70	7	Jl	27	·76	2	Au	26	·2	4	My	29	·70	7	Jl	27	·76	2	Au	26	·2								
4724	1680	1545	28M	·9449	21·5893	12·192	1623	4	7	Ap	19	·53	2	My	19	·06	3	Je	17	·59	5	Jl	17	·13	6	Au	15	·6	6	Je	28	·23	5	Jl	17	·13	6	Au	15	·6								
4725	1681	1546	28M	·2036	10·6976	8·350	1624	5	4	Ap	7	·90	6	My	7	·43	7	Je	5	·98	2	Jl	5	·49	4	Au	4	·0	7	Je	5	·98	2	Jl	5	·49	4	Au	4	·0								
4726	1682	1547	28M	·4624	29·3365	6·483	1625	7	3	Ap	26	·80	5	My	26	·33	6	Je	24	·86	1	Jl	24	·39	2	Au	22	·9	8	Je	24	·86	1	Jl	24	·39	2	Au	22	·9								
4727	1683	1548	28M	·7211	18·4448	2·640	1626	1	1	Ap	16	·17	2	My	15	·70	4	Je	14	·23	5	Jl	13	·76	7	Au	12	·2	9	Je	14	·23	5	Jl	13	·76	7	Au	12	·2								
4728	1684	1549	28M	·9799	7·5531	26·352	1627	2	5	Ap	5	·53	7	My	5	·06	1	Je	3	·59	3	Jl	30	·12	6	Au	31	·1	10	Je	3	·59	3	Jl	30	·12	6	Au	31	·1								
4729	1685	1550	28M	·2386	26·1920	24·485	1628	3	4	Ap	23	·43	5	My	22	·96	7	Je	21	·49	2	Jl	21	·02	3	Au	19	·5	11	Je	21	·49	2	Jl	21	·02	3	Au	19	·5								
4730	1686	1551	28M	·4974	15·3003	20·643	1629	5	1	Ap	12	·80	3	My	12	·33	4	Je	10	·86	6	Jl	10	·39	7	Au	8	·9	12	Je	10	·86	6	Jl	10	·39	7	Au	8	·9								
4731	1687	1552	28M	·7562	4·4086	16·800	1630	6	6	Ap	2	·16	7	My	10	·69	2	My	31	·23	5	Jl	29	·29	6	Au	27	·8	13	Je	31	·23	5	Jl	29	·29	6	Au	27	·8								
4732	1688	1553	29M	·0149	23·0475	14·933	1631	7	5	Ap	21	·06	6	My	20	·59	1	Je	19	·12	2	Jl	18	·65	4	Au	17	·1	14	Je	19	·12	2	Jl	18	·65	4	Au	17	·1								
4733	1689	1554	28M	·2737	12·1558	11·090	1632	1	2	Ap	9	·43	3	My	8	·96	5	Je	7	·49	7	Jl	7	·02	1	Au	5	·5	15	Je	7	·49	7	Jl	7	·02	1	Au	5	·5								
4734	1690	1555	28M	·5324	1·2641	7·248	1633	3	6	Mr	29	·80	2	My	27	·86	4	Je	26	·39	5	Jl	25	·92	7	Au	24	·4	16	Je	29	·80	2	My	27	·86	4	Je	26	·39	5	Jl	25	·92	7	Au	24	·4
4735	1691	1556	28M	·7912	19·9030	5·381	1634	4	5	Ap	17	·69	7	My	17	·22	1	Je	15	·75	3	Jl	15	·29	4	Au	13	·8	17	Je	15	·75	3	Jl	15	·29	4	Au	13	·8								
4736	1692	1557	29M	·0499	9·0113	1·538	1635	5	3	Ap	7	·06	4	My	6	·59	6	Je	5	·12	7	Jl	4	·65	2	Au	30	·1	18	Je	5	·12	7	Jl	4	·65	2	Au	30	·1								
4737	1693	1558	28M	·3087	27·6502	27·226	1636	6	1	Ap	24	·96	3	My	24	·49	5	Je	23	·02	6	Jl	22	·55	1	Au	21	·0	19	Je	23	·02	6	Jl	22	·55	1	Au	21	·0								
4738	1694	1559	28M	·5675	16·7585	23·383	1637	1	6	Ap	14	·33	7	My	13	·86	2	Je	12	·39	3	Jl	11	·92	5	Au	10	·4	20	Je	12	·39	3	Jl	11	·92	5	Au	10	·4								
4739	1695	1560	28M	·8262	5·8668	19·540	1638	2	3	Ap	3	·69	5	My	3	·22	6	Je	10	·75	1	Jl	1	·28	4	Au	29	·3	21	Je	10	·75	1	Jl	1	·28	4	Au	29	·3								
4740	1396	1561	29M	·0850	24·5056	17·674	1639	3	2	Ap	22	·59	4	My	22	·12	5	Je	20	·65	7	Jl	20	·18	1	Au	18	·7	22	Je	20	·65	7	Jl	20	·18	1	Au	18	·7								
4741	1697	1562	28M	·3437	13·6139	13·831	1640	4	6	Ap	10	·96	1	My	10	·49	3	Je	9	·02	4	Jl	8	·55	6	Au	7	·0	23	Je	9	·02	4	Jl	8	·55	6	Au	7	·0								
4742	1698	1563	28M	·6025	2·7222	9·988	1641	6	4	Mr	31	·32	5	Ap	29	·85	1	Je	27	·92	3	Jl	27	·45	4	Au	25	·9	24	Je	27	·92	3	Jl	27	·45	4	Au	25	·9								
4743	1699	1564	28M	·8612	21·3611	8·121	1642	7	3	Ap	19	·22	4	My	18	·75	6	Je	17	·28	7	Jl	16	·81	2	Au	15	·3	25	Je	17	·28	7	Jl	16	·81	2	Au	15	·3								
4744	1700	1565	29M	·1200	10·4694	4·279	1643	1	7	Ap	8	·59	2	My	8	·12	3	Je	6	·65	5	Jl	6	·18	6	Au	4	·7	26	Je	6	·65	5	Jl	6	·18	6	Au	4	·7								
4745	1701	1566	28M	·3787	29·1083	2·412	1644	2	6	Ap	26	·49	1	My	26	·02	2	Je	24	·55	4	Jl	24	·08	5	Au	22	·6	27	Je	24	·55	4	Jl	24	·08	5	Au	22	·6								
4746	1702	1567	28M	·6375	18·2163	26·124	1645	4	3	Ap	15	·85	5	My	15	·38	6	Je	13	·91	1	Jl	13	·45	2	Au	11	·9	28	Je	13	·91	1	Jl	13	·45	2	Au	11	·9								
4747	1703	1568	28M	·8963	7·3249	22·281	1646	5	1	Ap	5	·22	2	My	4	·75	4	Je	3	·28	5	Jl	20	·81	1	Au	30	·8	29	Je	3	·28	5	Jl	20	·81	1	Au	30	·8								
4748	1704	1569	29M	·1550	25·9638	20·414	1647	6	7	Ap	24	·12	1	My	23	·65	3	Je	22	·18	4	Jl	21	·71	6	Au	20	·2	30	Je	22	·18	4	Jl	21	·71	6	Au	20	·2								
4749	1705	1570	28M	·4138	15·0721	16·571	1648	7	4	Ap	12	·49	6	My	12	·02	7	Je	10	·55	2	Jl	10	·08	3	Au	8	·6	31	Je	10	·55	2	Jl	10	·08	3	Au	8	·6								
4750	1706	1571	28M	·6725	4·1804	12·729	1649	2	1	Ap	1	·85	3	My	10	·38	4	My	30	·91	7	Jl	28	·97	2	Au	30	·5	1	My	30	·91	7	Jl	28	·97	2	Au	30	·5								
4751	1707																																															

Surya Siddhanta.

+ 147.65293	+ 177.18353	+ 206.71411	+ 236.24470	+ 265.77529	+ 295.30588	+ 324.83647		
+ 9.880	+ 11.856	+ 13.832	+ 15.808	+ 17.784	+ 19.760	+ 354.36705		
						+ 21.736		
						+ 23.712		
Asvina	Kartika	Margasira	Pausha	A.D.	Magha	A.D.	Phalguna	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction		Week-day Month Day Fraction		Week-day Month Day Fraction	Week-day Month Day Fraction
3 S 24 .82	5 O 24● .35	6 N 22 .88	1 D 22 .41	23	2 Jr 20 .94		4 F 19 .47	6 Mr 21○ .00
1 S 14○ .19	2 O 13 .72	4 N 12 .25	5 D 11 .78	24	7 Jr 10 .31		1 F 8 .84	3 Mr 9● .37
5 S 2○ .55	7 O 2 .08	1 O 31 .61	3 N 30 .15		4 D 29 .68	25	6 Jr 28 .21	7 F 26○ .74
								2 Mr 28 .27
4 S 21 .45	5 O 21 .98	7 N 19 .51	2 D 19 .04	26	3 Jr 17 .57		5 F 16● .10	6 Mr 17 .63
1 S 10 .82	3 O 10 .35	4 N 8 .88	6 D 8 .41	27	7 Jr 6○ .94		2 F 5 .47	4 Mr 7 .00
7 S 29 .72	2 O 29 .25	3 N 27 .78	5 D 27○ .31	28	6 Jr 25 .84		1 F 24 .37	2 Mr 24 .90
5 S 18 .08	6 O 17 .61	1 N 16 .14	2 D 15○ .67	29	4 Jr 14 .21		5 F 12 .74	7 Mr 14 .27
2 S 7 .45	3 O 6 .98	5 N 5 .51	7 D 5 .04	30	1 Jr 3 .57		3 F 2 .10	4 Mr 3 .63
1 S 26 .35	2 O 25○ .88	4 N 24● .41	5 D 23 .94	31	7 Jr 22 .47		2 F 21 .00	3 Mr 22 .53
5 S 15 .71	7 O 15● .25	1 N 13 .78	3 D 13 .31	32	4 Jr 11 .84		6 F 10 .37	7 Mr 10 .90
3 S 4 .08	4 O 3○ .61	6 N 2 .14	7 D 1 .67		2 D 31 .20	33	3 Jr 29 .73	5 F 28 .27
1 S 22● .98	3 O 22 .51	5 N 21 .04	6 D 20 .57	34	1 Jr 19 .10		2 F 17○ .63	4 Mr 19● .16
6 S 12 .35	7 O 11 .88	2 N 10 .41	3 D 9 .94	35	5 Jr 8 .47		7 F 7○ .00	1 Mr 8 .53
5 O 1 .24	6 O 30 .77	1 N 29 .31	2 D 28 .84	36	4 Jr 27○ .37		5 F 25 .90	7 Mr 26 .43
2 S 19 .61	4 O 19 .14	5 N 17 .67	7 D 17 .20	37	1 Jr 15● .73		3 F 14 .26	4 Mr 15 .79
6 S 8 .98	1 O 8 .51	3 N 7 .04	4 D 6○ .57	38	6 Jr 5● .10		7 F 3 .63	2 Mr 5 .16
5 S 27 .88	7 O 27 .41	1 N 25○ .94	3 D 25 .47	39	5 Jr 24 .00		6 F 22 .53	1 Mr 24 .06
3 S 17 .24	4 O 16 .77	6 N 15○ .30	7 D 14 .83	40	2 Jr 13 .37		3 F 11 .90	5 Mr 12 .43
7 S 5 .61	2 O 5 .14	3 N 3 .67	5 D 3 .20	41	6 Jr 1 .73		1 Jr 30 .26	2 Mr 1 .79
6 S 24○ .51	1 O 24● .04	2 N 22 .57	4 D 22 .10	42	5 Jr 20 .63		7 F 19 .16	1 Mr 20○ .69
3 S 13○ .87	5 O 3 .41	6 N 11 .94	1 D 11 .47	43	3 Jr 9 .00		4 F 8 .53	6 Mr 10● .06
1 S 3● .24	2 O 2 .77	4 N 1 .30	5 N 30 .83		7 D 30 .36	44	1 Jr 28 .89	3 F 27 .43
								4 Mr 27 .96
7 S 21 .14	1 O 20 .67	3 N 19 .20	4 D 18 .73	45	6 Jr 17○ .26		7 F 15 .79	2 Mr 17 .32
4 S 10 .51	6 O 10 .04	7 N 8 .57	2 D 8 .10	46	3 Jr 6○ .63		5 F 5 .16	6 Mr 6 .69
3 S 29 .40	4 O 28 .93	6 N 27 .47	1 D 27○ .00	47	2 Jr 25 .53		4 F 24 .06	5 Mr 25 .59
7 S 18 .77	2 O 18 .30	3 N 16 .83	5 D 16● .36	48	6 Jr 14 .89		1 F 13 .42	2 Mr 13 .95
5 S 7 .14	6 O 6 .67	1 N 5○ .20	2 D 4 .73	49	4 Jr 3 .26		5 F 1 .79	7 Mr 3 .32
4 S 26 .04	5 O 25○ .57	7 N 24 .10	1 D 23 .63	50	3 Jr 22 .16		4 F 20 .69	6 Mr 22 .22
1 S 15 .40	2 O 14● .93	4 N 13 .46	5 D 12 .99	51	7 Jr 11 .53		2 F 10 .06	3 Mr 11 .59
5 S 4 .77	7 O 4 .30	1 N 2 .83	3 D 2 .36		4 D 31 .89	52	6 Jr 30 .42	7 F 28○ .95
4 S 22 .67	6 O 22 .20	7 N 20 .73	2 D 20 .26	53	3 Jr 18 .79		5 F 17○ .32	6 Mr 18● .85
2 S 12 .03	3 O 11 .57	5 N 10 .10	6 D 9 .63	54	1 Jr 8 .16		2 F 6● .69	4 Mr 8 .22
7 S 30 .93	2 O 30 .46	3 N 28 .99	5 D 28 .52	55	7 Jr 27● .05		1 F 25 .59	3 Mr 27 .12
5 S 20 .30	6 O 19 .83	1 N 18 .36	2 D 17○ .89	56	4 Jr 16 .42		5 F 14 .95	7 Mr 15 .48
2 S 8 .67	4 O 8 .20	5 N 6 .73	7 D 6○ .26	57	1 Jr 4 .79		3 F 3 .32	4 Mr 4 .85
1 S 27 .56	3 O 27 .09	4 N 25○ .63	6 D 25 .16	58	7 Jr 23 .69		2 F 22 .22	3 Mr 23 .75
5 S 16 .93	7 O 16 .46	1 N 14 .99	3 D 14 .52	59	5 Jr 13 .05		6 F 11 .58	1 Mr 13 .11
3 S 6 .30	4 O 5○ .83	6 N 4 .36	7 D 3 .89	60	2 Jr 2 .42		3 Jr 31 .95	5 Mr 1 .48
2 S 24○ .20	3 O 23 .73	5 N 22 .26	6 D 21 .79	61	1 Jr 20 .32		2 F 18 .85	4 Mr 20● .38

TABLE X—

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom col. 6					☾'s Anom col. 7					☉'s Anom col. 6					☾'s Anom col. 7									
									+ 29·53059					+ 1·976					+ 59·06117					+ 88·59176					+ 118·12235				
									+ 3·952					+ 7·904																			
									Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada								
									Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction					
4762	1718	1583	28M	·7776	21·1329	4·050	1661	3	5	Ap	18	·91	7	My	18	·44	1	Je	16	·97	3	Jl	16	·50	5	Au	15	·03					
4763	1719	1584	29M	·0364	10·2412	0·208	1662	4	3	Ap	8	·28	4	My	7	·81	6	Je	6	·34	7	Jl	5	·87	2	Au	4	·40					
4764	1720	1585	29M	·2951	28·8801	25·895	1663	5	2	Ap	27	·17	3	My	26	·71	5	Je	25	·24	6	Jl	24	·77	1	Au	23	·30					
4765	1721	1586	28M	·5539	17·9884	22·053	1664	6	6	Ap	15	·54	1	My	15	·07	2	Je	13	·60	4	Jl	13	·13	5	Au	11	·66					
4766	1722	1587	28M	·8126	7·0967	18·210	1665	1	3	Ap	4	·91	5	My	4	·44	6	Je	2	·97	1	Jl	2	·50	4	Au	30	·56					
																					3	Au	1	·03									
4767	1723	1588	29M	·0714	25·7356	16·343	1666	2	2	Ap	23	·81	4	My	23	·34	5	Je	21	·87	7	Jl	21	·40	1	Au	19	·93					
4768	1724	1589	29M	·3301	14·8439	12·500	1667	3	7	Ap	13	·17	1	My	12	·70	3	Je	11	·23	4	Jl	10	·77	6	Au	9	·30					
4769	1725	1590	28M	·5889	3·9522	8·658	1668	4	4	Ap	1	·54	6	My	1	·07	7	My	30	·60	3	Jl	28	·66	5	Au	27	·19					
																	2	Je	29	·13													
4770	1726	1591	28M	·8477	22·5911	6·791	1669	6	3	Ap	20	·44	4	My	19	·97	6	Je	18	·50	1	Jl	18	·03	2	Au	16	·56					
4771	1727	1592	29M	·1064	11·6994	2·948	1670	7	7	Ap	9	·81	2	My	9	·34	3	Je	7	·87	5	Jl	7	·40	6	Au	5	·93					
4772	1728	1593	29M	·3652	0·8077	26·660	1671	1	5	Mr	30	·17	1	My	28	·23	2	Je	26	·76	4	Jl	26	·29	5	Au	24	·83					
									6	Ap	28	·70																					
4773	1729	1594	28M	·6239	19·4466	24·793	1672	2	4	Ap	17	·07	5	My	16	·60	7	Je	15	·13	1	Jl	14	·66	3	Au	13	·19					
4774	1730	1595	28M	·8827	8·5549	20·951	1673	4	1	Ap	6	·44	2	My	5	·97	4	Je	4	·50	6	Jl	4	·03	7	Au	2	·56					
																								2	S	1	·09						
4775	1731	1596	29M	·1414	27·1937	19·084	1674	5	7	Ap	25	·33	1	My	24	·87	3	Je	23	·40	4	Jl	22	·93	6	Au	21	·46					
4776	1732	1597	29M	·4002	16·3020	15·241	1675	6	4	Ap	14	·70	6	My	14	·23	7	Je	12	·76	2	Jl	12	·29	3	Au	10	·82					
4777	1733	1598	28M	·6590	5·4103	11·398	1676	7	2	Ap	3	·07	3	My	2	·60	5	Je	1	·13	6	Je	30	·66	2	Au	28	·72					
																					1	Jl	30	·19									
4778	1734	1599	28M	·9177	24·0492	9·531	1677	2	7	Ap	21	·97	2	My	21	·50	4	Je	20	·03	5	Jl	19	·56	7	Au	18	·09					
4779	1735	1600	29M	·1765	13·1575	5·689	1678	3	5	Ap	11	·33	6	My	10	·86	1	Je	9	·39	2	Jl	8	·93	4	Au	7	·46					
4780	1736	1601	29M	·4352	2·2658	1·846	1679	4	2	Mr	31	·70	4	Ap	30	·23	7	Je	28	·29	1	Jl	27	·82	3	Au	26	·35					
													5	My	29	·76																	
4781	1737	1602	28M	·6940	20·9047	27·534	1680	5	1	Ap	18	·60	3	My	18	·13	4	Je	16	·66	6	Jl	16	·19	7	Au	14	·72					
4782	1738	1603	28M	·9527	10·0130	23·691	1681	7	5	Ap	7	·97	7	My	7	·50	2	Je	6	·03	3	Jl	5	·56	5	Au	4	·09					
4783	1739	1604	29M	·2115	28·6519	21·824	1682	1	4	Ap	26	·86	6	My	26	·39	7	Je	24	·92	2	Jl	24	·45	3	Au	22	·99					
4784	1740	1605	29M	·4703	17·7602	17·982	1683	2	2	Ap	16	·23	3	My	15	·76	5	Je	14	·29	6	Jl	13	·82	1	Au	12	·35					
4785	1741	1606	28M	·7290	6·8685	14·139	1684	3	6	Ap	4	·60	1	My	4	·13	2	Je	2	·66	4	Jl	2	·19	7	Au	30	·25					
																					5	Jl	31	·72									
4786	1742	1607	28M	·9878	25·5074	12·272	1685	5	5	Ap	23	·49	7	My	23	·03	1	Je	21	·56	3	Jl	21	·09	4	Au	19	·62					
4787	1743	1608	29M	·2465	14·6157	8·429	1686	6	2	Ap	12	·86	4	My	12	·39	5	Je	10	·92	7	Jl	10	·45	1	Au	8	·98					
4788	1744	1609	29M	·5053	3·7240	4·587	1687	7	7	Ap	2	·23	1	My	1	·76	3	My	31	·29	6	Jl	29	·35	7	Au	27	·88					
																	4	Je	29	·82													
4789	1745	1610	28M	·7640	22·3629	2·720	1688	1	6	Ap	20	·13	7	My	19	·66	2	Je	18	·19	3	Jl	17	·72	5	Au	16	·25					
4790	1746	1611	29M	·0228	11·4712	26·432	1689	3	3	Ap	9	·49	5	My	9	·02	6	Je	7	·55	1	Jl	7	·09	2	Au	5	·62					
4791	1747	1612	29M	·2815	0·5795	22·589	1690	4	7	Mr	29	·86	3	My	27	·92	5	Je	26	·45	6	Jl	25	·98	1	Au	24	·51					
									2	Ap	28	·39																					
4792	1748	1613	29M	·5403	19·2184	20·722	1691	5	6	Ap	17	·76	1	My	17	·29	2	Je	15	·82	4	Jl	15	·35	5	Au	13	·88					
4793	1749	1614	28M	·7991	8·3267	16·880	1692	6	4	Ap	6	·13	5	My	5	·66	7	Je	4	·19	1	Jl	3	·72	3	Au	2	·25					
																								4	Au	31	·78						
4794	1750	1615	29M	·0578	26·9655	15·013	1693	1	3	Ap	25	·02	4	My	24	·55	6	Je	23	·08	7	Jl	22	·61	2	Au	21	·15					
4795	1751	1616	29M	·3166	16·0738	11·170	1694	2	7	Ap	14	·39	1	My	13	·92	3	Je	12	·45	4	Jl	11	·98	6	Au	10	·51					
4796	1752	1617	29M	·5753	5·1821	7·327	1695	3	4	Ap	3	·76	6	My	3	·29	7	Je	1	·82	3	Jl	30	·88	5	Au	29	·41					
																	2	Jl	1	·35													
4797	1753	1618	28M	·8341	23·8210	5·461	1696	4	3	Ap	21	·65	5	My	21	·19	6	Je	19	·72	1	Jl	19	·25	2	Au	17	·78					
4798	1754	1619	29M	·0928	12·9293	1·618	1697	6	1	Ap	11	·02	2	My	10	·55	4	Je	9	·08	5	Jl	8	·61	7	Au	7	·14					
4799	1755	1620	29M	·3516	2·0370	25·330	1698	7	5	Mr	31	·39	6	Ap	29	·92	2	Je	27	·98	4	Jl	27	·51	6	Au	26	·04					
													1	My	29	·45																	
4800	1756	1621	29M	·6104	20·6765	23·463	1699	1	4	Ap	19	·29	5	My	18	·82	7	Je	17	·35	1	Jl	16	·88	3	Au	15	·41					

Surya Siddhanta.

+ 147.65293				+ 177.18353				+ 206.71411				+ 236.24470				+ 265.77529				+ 295.30588				{ + 324.83647 + 354.36705 + 21.736 + 23.712											
+ 9.880				+ 11.856				+ 13.832				+ 15.808				+ 17.784				+ 19.760															
Asvina				Kartika				Margasira				Pausha				A.D.				Magha				A.D.				Phalguna				Chaitra			
Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction						
6 S	13	13	.56	1 O	13	.09	2 N	11	.62	4 D	11	.15	62	5 Jr	9	.69	63	7 F	8	.22	1 Mr	9	.75	{	6 F	27	.11	7 Mr	28	.64					
3 S	2	2	.93	5 O	2	.46	6 O	31	.99	1 N	30	.52		3 D	30	.05		4 Jr	28	.58	6 F	27	.11												
2 S	21	21	.83	4 O	21	.36	5 N	19	.89	7 D	19	.42	64	1 Jr	17	.95	3 F	16	.48	5 Mr	17	.01													
7 S	10	10	.19	1 O	9	.73	3 N	8	.26	4 D	7	.79	65	6 Jr	6	.32	71	7 F	4	.85	2 Mr	6	.38	{	2 Mr	6	.38	1 Mr	25	.28					
6 S	29	29	.09	7 O	28	.62	2 N	27	.15	3 D	26	.68	66	5 Jr	25	.21		6 F	23	.75	1 Mr	25	.28												
3 S	18	18	.46	4 O	17	.99	6 N	16	.52	1 D	16	.05	67	2 Jr	14	.58	72	4 F	13	.11	5 Mr	14	.64	{	3 Mr	3	.01	1 Mr	21	.91					
7 S	7	7	.83	2 O	7	.36	3 N	5	.89	5 D	5	.42	68	6 Jr	3	.95		1 F	2	.48	3 Mr	3	.01												
6 S	25	25	.72	1 O	25	.25	2 N	23	.79	4 D	23	.32	69	5 Jr	21	.85	73	7 F	20	.38	1 Mr	21	.91	{	2 Mr	18	.54	6 Mr	7	.91					
4 S	15	15	.09	5 O	14	.62	7 N	13	.15	1 D	12	.68	70	3 Jr	11	.21		4 F	9	.74	6 Mr	11	.27												
1 S	4	4	.46	2 O	3	.99	4 N	2	.52	6 D	2	.05	74	7 D	31	.58	71	2 Jr	30	.11	3 F	28	.64	{	3 F	28	.64	2 Mr	18	.54					
7 S	23	23	.36	1 O	22	.89	3 N	21	.42	4 D	20	.95		72	6 Jr	19		.48	1 F	18	.01	2 Mr	18								.54				
4 S	11	11	.72	6 O	11	.25	7 N	9	.78	2 D	9	.31	75	3 Jr	7	.85	76	5 F	6	.38	6 Mr	7	.91	{	5 Mr	26	.80	3 Mr	16	.17					
3 S	30	30	.62	5 O	30	.15	6 N	28	.68	1 D	28	.21		74	2 Jr	26		.74	4 F	25	.27	5 Mr	26								.80				
7 S	19	19	.99	2 O	19	.52	4 N	18	.05	5 D	17	.58	77	7 Jr	16	.11	78	1 F	14	.64	3 Mr	16	.17	{	7 Mr	4	.54	6 Mr	23	.44					
5 S	9	9	.35	6 O	8	.89	1 N	7	.42	2 D	6	.95		76	4 Jr	5		.48	6 F	4	.01	7 Mr	4								.54				
4 S	27	27	.25	5 O	26	.78	7 N	25	.31	1 D	24	.84	79	3 Jr	23	.37	80	4 F	21	.91	6 Mr	23	.44	{	7 Mr	20	.07	3 Mr	12	.80					
1 S	16	16	.62	3 O	16	.15	4 N	14	.68	6 D	14	.21		78	7 Jr	12		.74	2 F	11	.27	3 Mr	12								.80				
5 S	5	5	.99	7 O	5	.52	2 N	4	.05	3 D	3	.58	81	5 Jr	2	.11	82	6 Jr	31	.64	1 Mr	2	.17	{	1 F	26	.80	3 Mr	28	.33					
4 S	24	24	.88	6 O	24	.41	7 N	22	.95	2 D	22	.48		80	4 Jr	21		.01	5 F	19	.54	7 Mr	20								.07				
2 S	13	13	.25	3 O	12	.78	5 N	11	.31	6 D	10	.84	83	1 Jr	9	.37	84	2 F	7	.90	4 Mr	9	.43								{	7 Mr	17	.70	5 Mr
6 S	2	2	.62	2 O	31	.68	4 N	30	.21	Pausha Kshaya				5 D	29	.74		7 Jr	28	.27	1 F	26	.80												
1 O	2	2	.15										85	4 Jr	17	.64	86	3 Mr	28	.33	7 Mr	17	.70	{	5 Mr	6	.07	3 Mr	24	.96					
5 S	21	21	.52	7 O	21	.05	1 N	19	.58	3 D	19	.11		83	2 Jr	7		.01	6 F	16	.17	7 Mr	17								.70				
2 S	10	10	.88	4 O	10	.41	5 N	8	.94	7 D	8	.47	87	7 Jr	24	.90	88	3 F	5	.54	5 Mr	6	.07	{	4 Mr	21	.60	6 Mr	14	.33					
1 S	28	28	.78	3 O	28	.31	4 N	26	.84	6 D	26	.37		85	5 Jr	14		.27	2 F	23	.43	3 Mr	24								.96				
6 S	18	18	.15	7 O	17	.68	2 N	16	.21	3 D	15	.74	89	1 Jr	22	.53	90	6 F	12	.80	1 Mr	14	.33	{	6 F	28	.33	5 Mr	19	.23					
3 S	7	7	.51	5 O	7	.05	6 N	5	.58	1 D	5	.11		87	2 Jr	3		.64	4 F	2	.17	5 Mr	3								.70				
2 S	26	26	.41	3 O	25	.94	5 N	24	.47	7 D	24	.00	88	3 Jr	10	.90	3 F	21	.07	4 Mr	21	.60													
6 S	14	14	.78	1 O	14	.31	2 N	12	.84	4 D	12	.37	91	5 Jr	31	.27	92	7 F	9	.43	1 Mr	10	.96	{	6 F	28	.33	5 Mr	19	.23					
4 S	4	4	.15	5 O	3	.68	7 N	2	.21	1 D	1	.74		90	3 D	19		.17	4 Jr	29	.80	6 F	28								.33				
3 S	23	23	.04	4 O	22	.57	6 N	21	.11	7 D	20	.64	93	2 Jr	17	.69	94	3 F	17	.70	5 Mr	19	.23	{	2 Mr	23	.12	6 Mr	12	.49					
7 S	12	12	.41	1 O	11	.94	3 N	10	.47	5 D	10	.00		92	6 Jr	8		.53	1 F	7	.06	2 Mr	7								.59				
6 S	30	30	.31	7 O	29	.84	2 N	28	.37	3 D	27	.90	93	5 Jr	26	.43	6 F	24	.96	1 Mr	26	.49													
3 S	19	19	.68	5 O	19	.21	6 N	17	.74	1 D	17	.27	95	2 Jr	15	.80	96	4 F	14	.33	5 Mr	15	.86	{	3 Mr	5	.23	2 Mr	23	.12					
1 S	9	9	.04	2 O	8	.57	4 N	7	.10	5 D	6	.63		95	7 Jr	5		.17	1 F	3	.70	3 Mr	5								.23				
6 S	27	27	.94	1 O	27	.47	3 N	26	.00	4 D	25	.53	96	6 Jr	24	.06	7 F	22	.59	2 Mr	23	.12													
4 S	16	16	.31	5 O	15	.84	7 N	14	.37	1 D	13	.90	97	3 Jr	12	.43	98	4 F	10	.96	6 Mr	12	.49	{	3 Mr	1	.80	2 Mr	20	.76					
1 S	5	5	.67	3 O	5	.21	4 N	3	.74	6 D	3	.27		98	7 Jr	1		.80	2 Jr	31	.33	3 Mr	1								.80				
7 S	24	24	.57	2 O	24	.10	3 N	22	.63	5 D	22	.16	99	6 Jr	20	.69	1 F	19	.23	2 Mr	20	.76													
4 S	13	13	.94	6 O	13	.47	1 N	12	.00	2 D	11	.53	17	4 Jr	10	.06	00	5 F	8	.59	7 Mr	9	.12												

TABLE X—

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada					
							Week-day of 1st January.				Week-day of 1st January.				Week-day of 1st January.				Week-day of 1st January.				Week-day of 1st January.					
							Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction		
4801	1757	1622	28M	·8691	9·7848	19·623	1700	2	1	Ap	7	·65	3	My	7	·18	4	Je	5	·71	6	Jl	5	·24	7	Au	30	·78
4802	1758	1623	29M	·1279	28·4237	17·756	1701	4	7	Ap	26	·55	2	My	26	·08	3	Je	24	·61	5	Jl	24	·14	6	Au	22	·67
4803	1759	1624	29M	·3866	17·5320	13·913	1702	5	4	Ap	15	·92	6	My	15	·45	7	Je	13	·98	2	Jl	13	·51	4	Au	12	·04
4804	1760	1625	29M	·6454	6·6403	10·071	1703	6	2	Ap	5	·28	3	My	4	·82	5	Je	30	·35	6	Jl	2	·88	2	Au	30	·94
4805	1761	1626	28M	·9041	25·2792	8·204	1704	1	1	Ap	23	·18	2	My	22	·71	4	Je	21	·24	5	Jl	20	·77	7	Au	19	·31
4806	1762	1627	29M	·1629	14·3875	4·361	1705	2	5	Ap	12	·55	7	My	12	·08	1	Je	10	·61	3	Jl	10	·14	4	Au	8	·67
4807	1763	1628	29M	·4217	3·4958	0·518	1706	3	2	Ap	10	·92	4	My	10	·45	7	Je	29	·51	2	Jl	29	·04	3	Au	27	·57
4808	1764	1629	29M	·6804	22·1347	26·206	1707	4	1	Ap	20	·81	3	My	20	·35	4	Je	18	·88	6	Jl	18	·41	7	Au	16	·94
4809	1765	1630	28M	·9392	11·2430	22·363	1708	5	6	Ap	9	·18	7	My	8	·71	2	Je	7	·24	3	Jl	6	·77	5	Au	5	·30
4810	1766	1631	29M	·1979	0·3513	18·521	1709	7	3	Mr	29	·55	6	My	27	·61	1	Je	26	·14	2	Jl	25	·67	4	Au	24	·20
4811	1767	1632	29M	·4567	18·9902	16·654	1710	1	2	Ap	17	·45	3	My	16	·98	5	Je	15	·51	7	Jl	15	·04	1	Au	13	·57
4812	1768	1633	29M	·7154	8·0984	12·811	1711	2	6	Ap	6	·81	1	My	6	·34	2	Je	4	·87	4	Jl	4	·40	5	Au	2	·94
4813	1769	1634	28M	·9742	26·7373	10·944	1712	3	5	Ap	24	·71	7	My	24	·24	1	Je	22	·77	3	Jl	22	·30	7	S	1	·47
4814	1770	1635	29M	·2329	15·8456	7·102	1713	5	3	Ap	14	·08	4	My	13	·61	6	Je	12	·14	7	Jl	11	·67	4	Au	20	·83
4815	1771	1636	29M	·4917	4·9539	3·259	1714	6	7	Ap	3	·45	1	My	20	·98	3	Je	1	·51	6	Jl	30	·57	2	Au	10	·20
4816	1772	1637	29M	·7505	23·5928	1·392	1715	7	6	Ap	22	·34	7	My	21	·87	2	Je	20	·40	3	Jl	19	·93	5	Au	18	·47
4817	1773	1638	29M	·0092	12·7011	25·104	1716	1	3	Ap	10	·71	5	My	10	·24	6	Je	8	·77	1	Jl	8	·30	2	Au	6	·83
4818	1774	1639	29M	·2680	1·8094	21·261	1717	3	1	Mr	31	·08	2	Ap	29	·61	5	Je	27	·67	7	Jl	27	·20	1	Au	25	·73
4819	1775	1640	29M	·5267	20·4483	19·395	1718	4	6	Ap	18	·97	1	My	18	·51	3	Je	17	·04	4	Jl	16	·57	6	Au	15	·10
4820	1776	1641	29M	·7855	9·5566	15·552	1719	5	4	Ap	8	·34	5	My	7	·87	7	Je	6	·40	1	Jl	5	·93	3	Au	4	·46
4821	1777	1642	29M	·0442	28·1955	13·685	1720	6	3	Ap	26	·24	4	My	25	·77	6	Je	24	·30	7	Jl	23	·83	2	Au	22	·36
4822	1778	1643	29M	·3030	17·3038	9·842	1721	1	7	Ap	15	·61	2	My	15	·14	3	Je	13	·67	5	Jl	13	·20	6	Au	11	·73
4823	1779	1644	29M	·5618	6·4121	6·000	1722	2	4	Ap	4	·97	6	My	4	·50	1	Je	30	·03	2	Jl	2	·57	5	Au	30	·63
4824	1780	1645	29M	·8205	25·0510	4·133	1723	3	3	Ap	23	·87	5	My	23	·40	6	Je	21	·93	1	Jl	21	·46	2	Au	19	·99
4825	1781	1646	29M	·0793	14·1593	0·290	1724	4	1	Ap	12	·24	2	My	11	·77	4	Je	10	·30	5	Jl	9	·83	7	Au	8	·36
4826	1782	1647	29M	·3380	3·2676	24·002	1725	6	5	Ap	10	·61	7	My	1	·14	3	Je	29	·20	4	Jl	28	·73	6	Au	27	·26
4827	1783	1648	29M	·5968	21·9065	22·135	1726	7	4	Ap	20	·50	6	My	20	·03	7	Je	18	·56	2	Jl	18	·09	3	Au	16	·63
4828	1784	1649	29M	·8555	11·0148	18·292	1727	1	1	Ap	9	·87	3	My	9	·40	4	Je	7	·93	6	Jl	7	·46	7	Au	5	·99
4829	1785	1650	29M	·1143	0·1231	14·450	1728	2	6	Mr	29	·24	2	My	27	·30	3	Je	25	·83	5	Jl	25	·36	6	Au	23	·89
4830	1786	1651	29M	·3731	18·7619	12·583	1729	4	5	Ap	17	·13	6	My	16	·66	1	Je	15	·20	2	Jl	14	·73	4	Au	13	·26
4831	1787	1652	29M	·6318	7·8702	8·743	1730	5	2	Ap	6	·50	4	My	6	·03	5	Je	4	·56	7	Jl	4	·09	1	Au	2	·62
4832	1788	1653	29M	·8906	26·5091	6·873	1731	6	1	Ap	25	·40	2	My	24	·93	4	Je	23	·46	5	Jl	22	·99	7	Au	21	·52
4833	1789	1654	29M	·1493	15·6174	3·031	1732	7	5	Ap	13	·77	7	My	13	·30	1	Je	11	·83	3	Jl	11	·36	4	Au	9	·89
4834	1790	1655	29M	·4081	4·7257	26·742	1733	2	3	Ap	3	·13	4	My	20	·66	6	Je	1	·19	2	Jl	30	·26	3	Au	28	·79
4835	1791	1656	29M	·6668	23·3646	24·876	1734	3	2	Ap	22	·03	3	My	21	·56	5	Je	20	·09	6	Jl	19	·62	1	Au	18	·15
4836	1792	1657	29M	·9256	12·4729	21·033	1735	4	6	Ap	11	·40	7	My	10	·93	2	Je	9	·46	3	Jl	8	·99	5	Au	7	·52
4837	1793	1658	29M	·1843	1·5812	17·190	1736	5	3	Mr	30	·76	5	Ap	29	·30	1	Je	27	·36	2	Jl	26	·89	4	Au	25	·42
4838	1794	1659	29M	·4431	20·2201	15·323	1737	7	2	Ap	18	·66	4	My	18	·19	5	Je	16	·72	7	Jl	16	·25	1	Au	14	·78
4839	1795	1660	29M	·7019	9·3284	11·481	1738	1	7	Ap	8	·03	1	My	7	·56	3	Je	6	·09	4	Jl	5	·62	6	Au	4	·15

Surya Siddhanta.

+ 147.65293				+ 177.18353				+ 206.71411				+ 236.24470				+ 265.77529				+ 295.30588				{ + 324.83617 + 354.36705 + 21.736 + 23.712											
+ 9.880				+ 11.856				+ 13.832				+ 15.808				+ 17.784				+ 19.760															
Asvina				Kartika				Margasira				Pausha				A.D.				Magha				A.D.				Phalguna				Chaitra			
Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction				
{ 2 S 3 O 1 S 5 S 4 S	2	31	.37	5 O	31	.37	6 N	29	.90	1 D	29	.43	01	2 Jr	27	.96					4 F	26	.49	6 Mr	28	.02									
	1	.84																																	
	21	.20	2 O	20	.73	4 N	19	.26	5 D	18	.80	02	7 Jr	17	.33					1 F	15	.86	3 Mr	17	.39										
	10	.57	7 O	10	.10	1 N	8	.63	3 D	8	.16	03	4 Jr	6	.69					6 F	5	.22	7 Mr	6	.75										
1 S 6 S 5 S	29	.47	6 O	29	.00	7 N	27	.53	2 D	27	.06	04	3 Jr	25	.59					5 F	24	.12	6 Mr	24	.65										
	17	.84	3 O	17	.37	4 N	15	.90	6 D	15	.43	05	7 Jr	13	.96					2 F	12	.49	4 Mr	14	.02										
	7	.20	7 O	6	.73	2 N	5	.26	3 D	4	.79	06	5 Jr	3	.32					6 F	1	.86	1 Mr	3	.39										
	26	.10	6 O	25	.63	1 N	24	.16	2 D	23	.69	07	4 Jr	22	.22					5 F	20	.75	7 Mr	22	.28										
2 S 6 S 5 S	15	.47	4 O	15	.00	5 N	13	.53	7 D	13	.06	08	1 Jr	11	.59					3 F	10	.12	4 Mr	10	.65										
	3	.83	1 O	3	.36	2 N	1	.90	4 D	1	.43		5 D	30	.96	09				7 Jr	29	.49	2 F	28	.02										
	22	.73	7 O	22	.26	1 N	20	.79	3 D	20	.32	10	4 Jr	18	.85					6 F	17	.39	7 Mr	18	.92										
3 S 2 O	12	.10	4 O	11	.63	6 N	10	.16	7 D	9	.69	11	2 Jr	8	.22					3 F	6	.75	5 Mr	8	.28										
	1	.00	3 O	30	.53	5 N	29	.06	6 D	28	.59	12	1 Jr	27	.12					2 F	25	.65	4 Mr	26	.18										
6 S 3 S 2 S	19	.36	7 O	18	.89	2 N	17	.43	3 D	16	.96	13	5 Jr	15	.49					7 F	14	.02	1 Mr	15	.55										
	8	.73	5 O	8	.26	6 N	6	.79	1 D	6	.32	14	2 Jr	4	.85					4 F	3	.38	5 Mr	4	.91										
	27	.63	4 O	27	.16	5 N	25	.69	7 D	25	.22	15	1 Jr	23	.75					3 F	22	.28	4 Mr	23	.81										
7 S 4 S 3 S	17	.00	1 O	16	.53	3 N	15	.06	4 D	14	.59	16	6 Jr	13	.12					7 F	11	.65	2 Mr	12	.18										
	5	.36	5 O	4	.89	7 N	3	.42	1 D	2	.95	17	3 Jr	1	.49					5 Jr	31	.02	6 Mr	1	.55										
	24	.26	4 O	23	.79	6 N	22	.32	7 D	21	.85	18	2 Jr	20	.38					3 F	18	.91	5 Mr	20	.44										
{ 7 S 4 S 6 O	13	.63	2 O	13	.16	3 N	11	.69	5 D	11	.22	19	6 Jr	9	.75					1 F	8	.28	2 Mr	9	.81										
	2	.99	1 N	1	.06	2 N	30	.59	4 D	30	.12	20	5 Jr	28	.65					7 F	27	.18	1 Mr	27	.71										
	2	.53																																	
3 S 1 S 7 S	20	.89	5 O	20	.42	6 N	18	.95	1 D	18	.48	21	3 Jr	17	.01					4 F	15	.55	6 Mr	17	.08										
	10	.26	2 O	9	.79	4 N	8	.32	5 D	7	.85	22	7 Jr	6	.38					1 F	4	.91	3 Mr	6	.44										
	29	.16	1 O	28	.69	3 N	27	.22	4 D	26	.75	23	6 Jr	25	.28					7 F	23	.01	2 Mr	25	.34										
4 S 1 S 7 S	18	.52	6 O	18	.05	7 N	16	.59	2 D	16	.12	24	3 Jr	14	.65					5 F	13	.18	6 Mr	13	.71										
	6	.89	3 O	6	.42	4 N	4	.95	6 D	4	.48	25	1 Jr	3	.01					2 F	1	.54	4 Mr	3	.07										
	25	.79	2 O	25	.32	3 N	23	.85	5 D	23	.38	26	6 Jr	21	.91					1 F	20	.44	2 Mr	21	.97										
5 S 2 S 1 S	15	.16	6 O	14	.69	1 N	13	.22	2 D	12	.75	27	4 Jr	11	.28					5 F	9	.81	7 Mr	11	.34										
	4	.52	4 O	4	.05	5 N	2	.58	7 D	2	.11		1 D	31	.64	28				3 Jr	30	.18	4 F	28	.71										
	22	.42	2 O	21	.95	4 N	20	.48	6 D	20	.01	29	7 Jr	18	.54					2 F	17	.07	3 Mr	18	.60										
5 S 4 S	11	.79	7 O	11	.32	1 N	9	.85	3 D	9	.38	30	4 Jr	7	.91					6 F	6	.44	7 Mr	7	.97										
	30	.68	6 O	30	.22	7 N	28	.75	2 D	28	.28	31	3 Jr	26	.81					5 F	25	.34	6 Mr	26	.87										
2 S 6 S 5 S	20	.05	3 O	19	.58	5 N	18	.11	6 D	17	.64	32	1 Jr	16	.17					2 F	14	.70	4 Mr	15	.24										
	8	.42	7 O	7	.95	2 N	6	.48	4 D	6	.01	33	5 Jr	4	.54					7 F	3	.07	1 Mr	4	.60										
	27	.32	6 O	26	.85	1 N	25	.38	2 D	24	.91	34	4 Jr	23	.44					5 F	21	.97	7 Mr	23	.50										
2 S 7 S 5 S	16	.68	4 O	16	.21	5 N	14	.74	7 D	14	.28	35	1 Jr	12	.81					3 F	11	.34	4 Mr	12	.87										
	6	.05	1 O	5	.58	3 N	4	.11	4 D	3	.64	36	6 Jr	2	.17					7 Jr	31	.70	2 Mr	1	.23										
	23	.95	7 O	23	.48	2 N	22	.01	3 D	21	.54	37	5 Jr	20	.07					6 F	18	.60	1 Mr	20	.13										
{ 3 S 7 S 2 O	13	.32	4 O	12	.85	6 N	11	.38	7 D	10	.91	38	2 Jr	9	.44					3 F	7	.97	5 Mr	9	.50										
	2	.68	3 O	31	.74	5 N	30	.27	6 D	29	.80	39	1 Jr	28	.34					2 F	26	.87	4 Mr	28	.40										
	2	.21																																	

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D.	Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom col. 6					☾'s Anom col. 7					☽'s Anom col. 8					☽'s Anom col. 9									
										+ 29°53059					+ 1°976					+ 59°06117					+ 88°59176					+ 118°12235				
										+ 3°952					+ 5°928					+ 7°904														
			Month and day A.D.	Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada									
Week-day	Month	Day							Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction									
4840	1796	1661	29M	·9606	27·9673	9·614	1739	2	5	Ap	26	·93	7	My	26	·46	1	Je	24	·99	3	Jl	24	·52	5	Au	23	·05	5	Au	23	·05		
4841	1797	1662	29M	·2194	17·0756	5·771	1740	3	3	Ap	15	·29	4	My	14	·82	6	Je	13	·36	7	Jl	12	·89	2	Au	11	·42	2	Au	11	·42		
4842	1798	1663	29M	·4781	6·1839	1·929	1741	5	7	Ap	4	·66	2	My	4	·19	3	Je	2	·72	{	5	Jl	2	·25	1	Au	30	·31	1	Au	30	·31	
4843	1799	1664	29M	·7369	24·8228	0·062	1742	6	6	Ap	23	·56	1	My	23	·09	2	Je	21	·62		6	Jl	31	·78	5	Au	19	·68	5	Au	19	·68	
4844	1800	1665	29M	·9956	13·9311	23·774	1743	7	3	Ap	12	·93	5	My	12	·46	6	Je	10	·99	1	Jl	10	·52	3	Au	9	·05	3	Au	9	·05		
4845	1801	1666	29M	·2544	3·0394	19·931	1744	1	1	Ap	1	·29	2	Ap	30	·82	{	4	My	30	·35	7	Jl	28	·42	1	Au	26	·93	1	Au	26	·93	
4846	1802	1667	29M	·5132	21·6783	18·064	1745	3	7	Ap	20	·19	1	My	19	·72		3	Je	18	·25	4	Jl	17	·78	6	Au	16	·31	6	Au	16	·31	
4847	1803	1668	29M	·7719	10·7866	14·221	1746	4	4	Ap	9	·56	6	My	9	·09	7	Je	7	·62	2	Jl	7	·15	3	Au	5	·68	3	Au	5	·68		
4848	1804	1669	30M	·0307	29·4254	12·355	1747	5	3	Ap	28	·46	4	My	27	·99	6	Je	26	·52	1	Jl	26	·05	2	Au	24	·58	2	Au	24	·58		
4849	1805	1670	29M	·2894	18·5337	8·512	1748	6	7	Ap	16	·82	2	My	16	·35	3	Je	14	·88	5	Jl	14	·41	6	Au	12	·94	6	Au	12	·94		
4850	1806	1671	29M	·5482	7·6420	4·669	1749	1	5	Ap	6	·19	6	My	5	·72	1	Je	4	·25	2	Jl	3	·78	{	4	Au	2	·31	4	Au	2	·31	
4851	1807	1672	29M	·8069	26·2809	2·802	1750	2	4	Ap	25	·09	5	My	24	·62	7	Je	23	·15	1	Jl	22	·68		3	Au	21	·21	3	Au	21	·21	
4852	1808	1673	30M	·0657	15·3892	26·514	1751	3	1	Ap	14	·45	2	My	13	·98	4	Je	12	·52	6	Jl	12	·05	7	Au	10	·58	7	Au	10	·58		
4853	1809	1674	29M	·3244	4·4975	22·671	1752	4	5	Ap	2	·82	7	My	2	·35	{	1	My	31	·88	4	Jl	29	·94	6	Au	28	·47	6	Au	28	·47	
4854	1810	1675	9A	·5832	23·1364	20·805	1753	6	4	My	2	·72	6	Je	1	·25		7	Je	30	·78	2	Jl	30	·31	3	Au	23	·84	3	Au	23	·84	
4855	1811	1676	9A	·8420	12·2447	16·962	1754	6	2	Ap	22	·09	3	My	21	·62	5	Je	20	·15	6	Jl	19	·68	1	Au	18	·21	1	Au	18	·21		
4856	1812	1677	10A	·1007	1·3530	13·119	1755	4	6	Ap	11	·45	{	7	My	10	·98	4	Jl	9	·04	5	Au	7	·58	7	S	6	·11	7	S	6	·11	
4857	1813	1678	9A	·3595	19·9919	11·252	1756	5	5	Ap	29	·35		6	My	28	·88	1	Je	27	·41	2	Jl	26	·94	4	Au	25	·47	4	Au	25	·47	
4858	1814	1679	9A	·6182	9·1002	7·410	1757	7	2	Ap	18	·72	4	My	18	·25	5	Je	16	·78	7	Jl	16	·31	1	Au	14	·84	1	Au	14	·84		
4859	1815	1680	9A	·8770	27·7391	5·543	1758	1	1	My	7	·62	3	Je	6	·15	4	Jl	5	·68	6	Au	4	·21	7	S	2	·74	7	S	2	·74		
4860	1816	1681	10A	·1357	16·8474	1·700	1759	2	5	Ap	26	·98	7	My	26	·51	2	Je	25	·04	3	Jl	24	·57	5	Au	23	·10	5	Au	23	·10		
4861	1817	1682	9A	·3945	5·9557	25·412	1760	3	3	Ap	15	·35	4	My	14	·88	6	Je	13	·41	{	7	Jl	12	·94	4	S	10	·00	4	S	10	·00	
4862	1818	1683	9A	·6533	24·5946	23·545	1761	5	2	My	4	·25	3	Je	2	·78	5	Jl	2	·31		2	Au	11	·47	1	Au	30	·37	1	Au	30	·37	
4863	1819	1684	9A	·9120	13·7029	19·703	1762	6	6	Ap	23	·61	1	My	23	·14	2	Je	21	·68	4	Jl	21	·21	5	Au	19	·74	5	Au	19	·74		
4864	1820	1685	10A	·1708	2·8112	15·860	1763	7	3	Ap	12	·98	{	5	My	12	·51	1	Jl	10	·57	3	Au	9	·10	4	S	7	·63	4	S	7	·63	
4865	1821	1686	9A	·4295	21·4500	13·993	1764	1	2	Ap	30	·88		4	My	30	·41	5	Je	28	·94	7	Jl	28	·47	2	Au	27	·00	2	Au	27	·00	
4866	1822	1687	9A	·6883	10·5583	10·150	1765	3	7	Ap	20	·25	1	My	19	·78	3	Je	18	·31	4	Jl	17	·84	6	Au	16	·37	6	Au	16	·37		
4867	1823	1688	9A	·9470	29·1972	8·284	1766	4	6	My	9	·14	7	Je	7	·67	2	Jl	7	·20	3	Au	5	·74	5	S	4	·27	5	S	4	·27		
4868	1824	1689	10A	·2058	18·3055	4·441	1767	5	3	Ap	28	·51	5	My	28	·04	6	Je	26	·57	1	Jl	26	·10	2	Au	24	·63	2	Au	24	·63		
4869	1825	1690	9A	·4646	7·4138	0·598	1768	6	7	Ap	16	·88	2	My	16	·41	3	Je	14	·94	{	5	Jl	14	·47	1	S	11	·53	1	S	11	·53	
4870	1826	1691	9A	·7233	26·0527	26·286	1769	1	6	My	5	·78	1	Je	4	·31	2	Jl	3	·84		4	Au	2	·37	5	Au	31	·90	5	Au	31	·90	
4871	1827	1692	9A	·9821	15·1610	22·443	1770	2	4	Ap	25	·14	5	My	24	·67	7	Je	23	·20	1	Jl	22	·73	3	Au	21	·26	3	Au	21	·26		
4872	1828	1693	10A	·2408	4·2693	18·600	1771	3	1	Ap	14	·51	3	My	14	·04	{	4	Je	12	·57	7	Au	10	·63	2	S	9	·16	2	S	9	·16	
4873	1829	1694	9A	·4996	22·9082	16·734	1772	4	7	My	2	·41	1	My	31	·94		3	Je	30	·47	5	Jl	30	·00	6	Au	28	·53	6	Au	28	·53	
4874	1830	1695	9A	·7583	12·0165	12·891	1773	6	4	Ap	21	·77	6	My	21	·30	7	Je	19	·84	2	Jl	19	·37	3	Au	17	·90	3	Au	17	·90		
4875	1831	1696	10A	·0171	1·1248	9·048	1774	7	{	2	Ap	11	·14	5	Je	9	·20	6	Jl	8	·73	1	Au	7	·26	2	S	5	·79	2	S	5	·79	
4876	1832	1697	10A	·2758	19·7637	7·181	1775	1		1	Ap	30	·04	2	My	29	·57	4	Je	28	·10	5	Jl	27	·63	7								

Surya Siddhanta.

+ 147.65293				+ 177.18353				+ 206.71411				+ 236.24470				+ 265.77529				+ 295.30588				{ + 324.83647					
+ 9.880				+ 11.856				+ 13.832				+ 15.808				+ 17.784				+ 19.760				{ + 354.36705					
																								{ + 21.736					
																								{ + 23.712					
Asvina				Kartika				Margasira				A.D.	Pausha				A.D.	Magha				Phalguna				Chaitra			
Week-day	Month	Day	action	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
6 S	21	58		1 O	21	11	2 N	19	64				4 D	19	17	40		5 Jr	17	70	7 F	16	23	1 Mr	16	76			
3 S	9	95		5 O	9	48	7 N	8	01				1 D	7	54	41		3 Jr	6	07	4 F	4	60	6 Mr	6	13			
2 S	28	84		4 O	28	38	5 N	26	91				7 D	26	44	42		1 Jr	24	97	3 F	23	50	5 Mr	25	03			
7 S	18	21		1 O	17	74	3 N	16	27				4 D	15	80	43		6 Jr	14	33	7 F	12	86	2 Mr	14	40			
4 S	7	58		6 O	7	11	7 N	5	64				2 D	5	17	44		3 Jr	3	70	5 F	2	23	6 Mr	2	76			
3 S	25	48		5 O	25	01	6 N	23	54				1 D	23	07	45		2 Jr	21	60	4 F	20	13	5 Mr	21	66			
7 S	14	84		2 O	14	37	3 N	12	91				5 D	12	44	46		6 Jr	10	97	1 F	9	50	3 Mr	11	03			
5 S	4	21		6 O	3	74	1 N	2	27				2 D	1	80			4 D	31	33	47	5 Jr	29	86	7 F	28	39		
4 S	23	11		5 O	22	64	7 N	21	17				1 D	20	70	48		3 Jr	19	23	4 F	17	76	6 Mr	18	29			
1 S	11	48		3 O	11	01	4 N	9	54				6 D	9	07	49		7 Jr	7	60	2 F	6	13	3 Mr	7	66			
7 S	30	37		1 O	29	90	3 N	28	43				4 D	27	96	50		6 Jr	26	50	1 F	25	03	2 Mr	26	56			
4 S	19	74		6 O	19	27	7 N	17	80				2 D	17	33	51		3 Jr	15	86	5 F	14	39	6 Mr	15	92			
2 S	9	11		3 O	8	64	5 N	7	17				6 D	6	70	52		1 Jr	5	23	2 F	3	76	4 Mr	4	29			
1 O*	8	00		2 N	6	54	4 D	6	07	53			5 Jr	4	60			7 F	3	13	1 Mr	4	66	3 Ap	3	19			
5 S	27	37		6 O	26	90	1 N	25	43				2 D	24	96	54		4 Jr	23	49	6 F	22	02	7 Mr	23	56			
2 S	16	74		4 O	16	27	5 N	14	80				7 D	14	33	55		1 Jr	12	86	3 F	11	39	4 Mr	12	92			
1 O	5	64		3 N	4	17	4 D	3	70	56			6 Jr	2	23			7 Jr	31	76	2 Mr	1	29	3 Mr	30	82			
6 S	24	00		7 O	23	53	2 N	22	06				3 D	21	60	57		5 Jr	20	13	6 F	18	66	1 Mr	20	19			
3 S	13	37		6 N	11	43	7 D	10	96	58			2 Jr	9	49			4 F	8	02	5 Mr	9	55	7 Ap	8	08			
4 O	12	90																											
2 O	2	27		3 O	31	80	5 N	30	33				6 D	29	86	59		1 Jr	28	39	2 F	26	92	4 Mr	28	45			
6 S	21	64		1 O	21	17	2 N	19	70				4 D	19	23	60		5 Jr	17	76	7 F	16	29	1 Mr	16	82			
5 O	9	53		7 N	8	06	1 D	7	59	61			3 Jr	6	12			4 F	4	66	6 Mr	6	19	7 Ap	4	72			
2 S	28	90		4 O	28	43	5 N	26	96				7 D	26	49	62		2 Jr	25	02	3 F	23	55	5 Mr	25	08			
7 S	18	27		1 O	17	80	3 N	16	33				4 D	15	86	63		6 Jr	14	39	7 F	12	92	2 Mr	14	45			
6 O	7	16		7 N	5	70	2 D	5	23	64			3 Jr	3	76			5 F	2	29	6 Mr	2	82	1 Ap	1	35			
3 S	25	53		5 O	25	06	6 N	23	59				1 D	23	12	65		2 Jr	21	65	4 F	20	18	5 Mr	21	72			
7 S	14	90		2 O	14	43	3 N	12	96				5 D	12	49	66		7 Jr	11	02	1 F	9	55	3 Mr	11	08			
6 O	3	80		1 N	2	33	2 D	1	86				4 D	31	39	67		5 Jr	29	92	7 F	28	45	1 Mr	29	98			
4 S	23	16		5 O	22	69	1 N	21	22				1 D	20	76	68		3 Jr	19	29	4 F	17	82	6 Mr	18	35			
3 O	11	06		4 N	9	59	6 D	9	12	69			7 Jr	7	65			2 F	6	18	3 Mr	7	71	5 Ap	6	24			
7 S	30	43		1 O	29	96	3 N	28	49				5 D	28	02	70		6 Jr	26	55	1 F	25	08	2 Mr	26	61			
4 S	19	80		6 O	19	33	7 N	17	86				2 D	17	39	71		3 Jr	15	92	5 F	14	45	6 Mr	15	98			
3 O	8	69		5 N	7	22	6 D	6	75	72			1 Jr	5	28			2 F	3	82	4 Mr	4	35	5 Ap	2	88			
1 S	27	06		2 O	26	59	4 N	25	12				5 D	24	65	73		7 Jr	23	18	1 F	21	71	3 Mr	23	24			
5 S	16	43		6 O	15	96	1 N	14	49				3 D	14	02	74		4 Jr	12	55	6 F	11	08	7 Mr	12	61			
4 O	5	32		5 N	3	86	7 D	3	39	75			1 Jr	1	92			3 Jr	31	45	4 Mr	1	98	6 Mr	31	51			
1 S	24	69		3 O	24	22	4 N	22	75				6 D	22	28	76		7 Jr	20	81	2 F	19	34	3 Mr	19	88			
7 O	12	59		2 N	11	12	3 D	10	65	77			5 Jr	9	18			6 F	7	71	1 Mr	9	24	2 Ap	7	77			
4 O	1	96		6 O	31	49	1 N	30	02				2 D	29	55	78		4 Jr	28	08	5 F	26	61	7 Mr	28	14			
2 S	21	32		3 O	20	85	5 N	19	38				6 D	18	92	79		1 Jr	17	45	2 F	15	98	4 Mr	17	51			
1 O	10	22		2 N	8	75	4 D	8	28	80			5 Jr	6	81			7 F	5	34	1 Mr	5	87	3 Ap	4	40			

* In this year A.D. 1752, the **New Style** was introduced by an Act of the British Parliament and 11 days were dropped out, that is, the next day after Wednesday, 2 September 1752 was declared to be Thursday, 14 September 1752. Hence the New-Moon after 28 August 1752 which would ordinarily have occurred on 26 September 1752 actually occurred on 8 October 1752.

TABLE X-

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	☉'s Anom.col. 6					☉'s Anom.col. 7					☉'s Anom.col. 8					☉'s Anom.col. 9									
								+ 29.53029					+ 1.976					+ 59.06117					+ 88.59176					+ 118.12235				
								+ 3.952					+ 5.928					+ 118.12235					+ 7.904									
			Month and day A.D.	Fraction of day.			Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada									
							Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction						
4881	1837	1702	9A	.5696	24.3664	19.474	1780	7	4	My	30	.94	6	Je	2	.47	1	Jl	2	.00	2	Jl	31	.53	4	Au	30	.00				
4882	1838	1703	9A	.8284	13.4747	15.632	1781	2	2	Ap	23	.30	3	My	22	.83	5	Je	21	.36	6	Jl	20	.89	1	Au	19	.4				
4883	1839	1704	10A	.0871	2.5830	11.789	1782	3	6	Ap	12	.67	1	My	12	.20	4	Jl	10	.26	5	Au	9	.79	7	S	7	.3				
													2	Je	10	.73																
4884	1840	1705	10A	.3459	21.2218	9.922	1783	4	5	My	1	.57	7	My	31	.10	1	Je	29	.63	3	Jl	29	.16	4	Au	27	.6				
4885	1841	1706	9A	.6047	10.3301	6.079	1784	5	2	Ap	19	.93	4	My	19	.46	6	Je	18	.00	7	Jl	17	.53	2	Au	16	.0				
4886	1842	1707	9A	.8634	28.9690	4.213	1785	7	1	My	8	.83	3	Je	7	.36	4	Jl	6	.89	6	Au	5	.42	7	S	3	.9				
4887	1843	1708	10A	.1222	18.0773	0.370	1786	1	6	Ap	28	.20	7	My	27	.73	2	Je	26	.26	3	Jl	25	.79	5	Au	24	.3				
4888	1844	1709	10A	.3809	7.1856	24.082	1787	2	3	Ap	17	.57	5	My	17	.10	6	Je	15	.63	1	Jl	15	.16	4	S	12	.2				
																					2	Au	13	.69								
4889	1845	1710	9A	.6397	25.8245	22.215	1788	3	2	My	5	.46	3	Je	3	.99	5	Jl	3	.52	7	Au	2	.06	1	Au	31	.5				
4890	1846	1711	9A	.8984	14.9328	18.372	1789	5	6	Ap	24	.83	1	My	24	.36	2	Je	22	.89	4	Jl	22	.12	5	Au	20	.9				
4891	1847	1712	10A	.1572	4.0411	14.529	1790	6	4	Ap	14	.20	5	My	13	.73	7	Je	12	.26	3	Au	10	.32	4	S	8	.8				
																					1	Jl	11	.79								
4892	1848	1713	10A	.4160	12.6800	2.663	1791	7	3	My	3	.10	4	Je	1	.63	6	Jl	1	.16	7	Jl	30	.69	2	Au	29	.2				
4893	1849	1714	9A	.6747	11.7883	8.820	1792	1	7	Ap	21	.46	1	My	20	.99	3	Je	19	.52	5	Jl	19	.05	6	Au	17	.5				
4894	1850	1715	9A	.9335	0.8966	4.977	1793	3	4	Ap	10	.83	7	Je	8	.89	2	Jl	8	.42	3	Au	6	.95	5	S	5	.4				
4895	1851	1716	10A	.1922	19.5355	3.110	1794	4	3	Ap	29	.73	5	My	29	.26	6	Je	27	.79	1	Jl	27	.32	2	Au	25	.8				
4896	1852	1717	10A	.4510	8.6438	26.822	1795	5	1	Ap	19	.09	2	My	18	.62	4	Je	17	.16	5	Jl	16	.69	7	Au	15	.2				
4897	1853	1718	9A	.7097	27.2827	24.955	1796	6	6	My	6	.99	1	Je	5	.52	3	Jl	5	.05	4	Au	3	.58	6	S	2	.1				
4898	1854	1719	9A	.9685	16.3910	21.113	1797	1	4	Ap	26	.36	5	My	25	.89	7	Je	24	.42	1	Jl	23	.95	3	Au	22	.4				
4899	1855	1720	10A	.2272	5.4993	17.270	1798	2	1	Ap	15	.73	3	My	15	.26	4	Je	13	.79	6	Jl	13	.32	2	S	10	.3				
4900	1856	1721	10A	.4860	24.1382	15.403	1799	3	7	My	4	.62	2	Je	3	.15	3	Jl	2	.68	5	Au	1	.22	6	Au	30	.7				
4901	1857	1722	10A	.7448	13.2464	11.563	1800	4	4	Ap	23	.99	6	My	23	.52	1	Je	22	.05	2	Jl	21	.58	4	Au	20	.1				
4902	1858	1723	11A	.0035	2.3548	7.720	1801	5	2	Ap	13	.36	3	My	12	.89	6	Jl	10	.95	1	Au	9	.48	3	S	8	.0				
4903	1859	1724	11A	.2623	20.9936	5.854	1802	6	1	My	2	.26	2	My	31	.79	4	Je	30	.32	5	Jl	29	.85	7	Au	28	.3				
4904	1860	1725	11A	.5210	10.1019	2.011	1803	7	5	Ap	21	.62	7	My	21	.15	1	Je	19	.68	3	Jl	19	.21	4	Au	17	.7				
4905	1861	1726	10A	.7798	28.7408	0.144	1804	1	4	My	9	.52	6	Je	8	.05	7	Jl	7	.58	2	Au	6	.11	3	S	4	.6				
4906	1862	1727	11A	.0385	17.8491	23.856	1805	3	1	Ap	28	.89	3	My	28	.42	4	Je	26	.95	6	Jl	26	.48	1	Au	25	.0				
4907	1863	1728	11A	.2973	6.9574	20.013	1806	4	6	Ap	18	.25	7	My	17	.78	2	Je	16	.32	3	Jl	15	.85	6	S	12	.9				
4908	1864	1729	11A	.5561	25.5963	18.147	1807	5	5	My	7	.15	6	Je	5	.68	1	Jl	5	.21	2	Au	3	.74	4	S	2	.2				
4909	1865	1730	10A	.8148	14.7046	14.304	1808	6	2	Ap	25	.52	4	My	25	.05	5	Je	23	.58	7	Jl	23	.11	1	Au	21	.6				
4910	1866	1731	11A	.0736	3.8129	10.461	1809	1	6	Ap	14	.89	1	My	14	.42	2	Je	12	.95	6	Au	11	.01	7	S	9	.5				
4911	1867	1732	11A	.3323	22.4518	8.594	1810	2	5	My	3	.78	7	Je	2	.31	1	Jl	1	.84	3	Jl	31	.37	4	Au	29	.9				
4912	1868	1733	11A	.5911	11.5601	4.752	1811	3	3	Ap	23	.15	4	My	22	.68	6	Je	21	.21	7	Jl	20	.74	2	Au	19	.2				
4913	1869	1734	10A	.8498	0.6684	0.909	1812	4	7	Ap	11	.52	3	Je	9	.58	5	Jl	9	.11	6	Au	7	.64	1	S	6	.1				
4914	1870	1735	11A	.1086	19.3073	26.597	1813	6	6	Ap	30	.42	7	My	29	.95	2	Je	28	.48	4	Jl	28	.00	5	Au	26	.5				
4915	1871	1736	11A	.3674	8.4156	22.754	1814	7	3	Ap	19	.78	5	My	19	.31	6	Je	17	.84	1	Jl	17	.37	2	Au	15	.9				
4916	1872	1737	11A	.6261	27.0545	20.887	1815	1	2	My	8	.68	4	Je	7	.21	5	Jl	6	.74	7	Au	5	.27	1	S	3	.8				
4917	1873	1738	10A	.8849	16.1628	17.044	1816	2	7	Ap	27	.05	1	My	26	.58	3	Je	25	.11	4	Jl	24	.64	6	Au	23	.1				
4918	1874	1739	11A	.1336	5.2711	13.202	1817	4	4	Ap	16	.41	5	My	15	.94	7	Je	14	.48	2	Jl	14	.01	5	S	11	.0				
4919	1875	1740	11A	.4024	23.9099	11.335	1818	5	3	My	5	.31	4	Je	3	.84	6	Jl	3	.37	7	Au	1	.90	2	Au	31	.4				

rya Siddhanta.

147·65293	+ 177·18353	+ 206·71411		+ 236·24470		+ 265·77529	+ 295·30588	{ +324·83647 +354·36705 +21·736 +23·712													
- 9·880	+ 11·856	+ 13·832		+ 15·808		+ 17·784	+ 19·760														
Asvina	Kartika			Margasira	A.D.	Pausha	A.D.	Magha	Phalguna	Chaitra											
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction			
S 28	·59	7 O	28○	·12	1 N	26	·65		3 D	26	·18	81	4 Jr	24	·71	6 F	23	·24	7 Mr	24	·77
S 17	·96	4 O	17●	·49	6 N	16	·02		7 D	15	·55	82	2 Jr	14	·08	3 F	12	·61	5 Mr	14○	·14
O 6●	·85	3 N	5	·38	4 D	4	·91	83	6 Jr	3	·44		7 F	1	·98	2 Mr	3○	·51	4 Ap	2	·04
S 26	·22	7 O	25	·75	2 N	24	·28		3 D	23	·81	84	5 Jr	22	·34	6 F	20○	·87	1 Mr	21	·40
S 14	·59	5 O	14	·12	6 N	12	·65		1 D	12	·18	85	2 Jr	10	·71	4 F	9●	·24	5 Mr	10	·77
																			7 Ap	9	·30
O 3	·48	4 N	2	·02	5 D	1	·55		7 D	31○	·08	86	1 Jr	29●	·61	3 F	28	·14	4 Mr	29	·67
S 22	·85	1 O	22	·38	2 N	20	·91		4 D	20○	·44	87	5 Jr	18	·97	7 F	17	·50	2 Mr	19	·04
O 11	·75	7 N	10	·28	1 D	9○	·81	88	3 Jr	8	·34		4 F	6	·87	6 Mr	7	·40	7 Ap	5	·93
S 30	·12	4 O	29	·65	6 N	28	·18		7 D	27	·71	89	2 Jr	26	·24	3 F	24	·77	5 Mr	26	·30
S 19	·48	2 O	19○	·01	3 N	17●	·54		5 D	17	·08	90	6 Jr	15	·61	1 F	14	·14	2 Mr	15	·67
O 8○	·38	7 N	6	·91	2 D	6	·44	91	3 Jr	4	·97		5 F	3	·50	7 Mr	5	·03	1 Ap	3○	·56
S 27○	·75	5 O	27	·28	6 N	25	·81		1 D	25	·34	92	2 Jr	23	·87	4 F	22	·40	5 Mr	22	·93
S 16●	·12	2 O	15	·65	4 N	14	·18		5 D	13	·71	93	7 Jr	12	·24	1 F	10○	·77	3 Mr	12●	·30
O 5	·01	1 N	3	·54	3 D	3	·07	94	4 Jr	1	·60		6 Jr	31○	·14	7 Mr	1	·67	2 Mr	31	·20
S 24	·38	5 O	23	·91	7 N	22	·44		1 D	21	·97	95	3 Jr	20●○	·50	5 F	19	·03	6 Mr	20	·56
O 13	·28	4 N	11	·81	6 D	11	·34	96	7 Jr	9●	·87		2 F	8	·40	3 Mr	8	·93	5 Ap	7	·46
O 1	·64	2 O	31	·18	3 N	29○	·71		5 D	29	·24	97	6 Jr	27	·77	1 F	26	·30	2 Mr	27	·33
S 21	·01	6 O	20	·54	1 N	19○	·07		2 D	18	·60	98	4 Jr	17	·13	5 F	15	·66	7 Mr	17	·20
O 9	·91	5 N	8○	·44	6 D	7	·97	99	1 Jr	6	·50		3 F	5	·03	4 Mr	6	·56	6 A	5	·09
S 29	·28	2 O	28	·81	4 N	27	·34	18	5 D	26	·87	00	7 Jr	25	·40	1 F	23	·93	3 Mr	25○	·46
S 18○	·64	7 O	18	·17	1 N	16	·70		3 D	16	·24	01	4 Jr	14	·77	6 F	13	·30	7 Mr	14○	·83
O 7	·54	6 N	6	·07	7 D	5	·60	02	2 Jr	4	·13		3 F	2	·66	5 Mr	4○	·19	6 Ap	2	·72
S 26	·91	3 O	26	·44	4 N	24	·97		6 D	24	·50	03	1 Jr	23	·03	2 F	21	·50	4 Mr	23	·09
S 16	·28	7 O	15	·81	2 N	14	·34		3 D	13	·87	04	5 Jr	12○	·40	6 F	10●	·93	1 Mr	11	·46
																			2 Ap	9	·99
O 4	·17	6 N	2	·70	1 D	2	·23		2 D	31○	·76	05	4 Jr	30	·30	5 F	28	·83	7 Mr	30	·36
S 23	·54	4 O	23	·07	5 N	21	·60		7 D	21○	·13	06	1 Jr	19	·66	3 F	18	·19	4 Mr	19	·72
O 12	·44	2 N	10	·97	4 D	10●	·50	07	6 Jr	9	·03		7 F	7	·56	2 Mr	9	·09	3 Ap	7	·62
O 1	·80	7 O	31○	·34	1 N	29●	·87		3 D	29	·40	08	4 Jr	27	·93	6 F	26	·46	7 Mr	26	·99
S 20	·17	4 O	19○	·70	6 N	18●	·23		7 D	17	·76	09	2 Jr	16	·29	3 F	14	·82	5 Mr	16	·36
O 9○	·07	3 N	7	·60	5 D	7	·13	10	6 Jr	5	·66		1 F	4	·19	2 Mr	5	·72	4 Ap	4●	·25
S 28	·44	7 O	27	·97	2 N	26	·50		4 D	26	·03	11	5 Jr	24	·56	7 F	23○	·09	1 Mr	24	·62
S 17	·80	5 O	17	·33	6 N	15	·86		1 D	15	·40	12	2 Jr	13	·93	4 F	12○	·46	5 Mr	12	·99
O 5	·70	4 N	4	·23	5 D	3	·76	13	7 Jr	2	·29		1 Jr	31●○	·82	3 Mr	2	·35	4 Mr	31	·88
S 25	·07	1 O	24	·60	3 N	23	·13		4 D	22	·66	14	6 Jr	21	·19	7 F	19	·72	2 Mr	21	·25
O 13	·97	7 N	12	·50	2 D	12○	·03	15	3 Jr	10	·56		5 F	9	·09	6 Mr	10	·62	1 Ap	9	·15
O 3	·33	4 N	1	·86	6 D	1○	·39		7 D	30	·92	16	2 Jr	29	·46	3 F	27	·99	5 Mr	28	·52
S 21	·70	2 O	21	·23	3 N	19○	·76		5 D	19	·29	17	6 Jr	17	·82	1 F	16	·35	2 Mr	17	·88
O 10	·60	1 N	9●	·13	2 D	8	·66	18	4 Jr	7	·19		5 F	5	·72	7 Mr	7	·25	1 Ap	5○	·78
S 29○	·96	5 O	29	·50	7 N	28	·03		1 D	27	·56	19	3 Jr	26	·09	4 F	24	·62	6 Mr	26○	15

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.J.	Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	☉'s Anom col. 6 + 29°53'059					☉'s Anom col. 7 + 1°9'76					☉'s Anom col. 8 + 59°06'117					☉'s Anom col. 9 + 88°59'176					☉'s Anom col. 10 + 118°12'235				
									☉'s Anom col. 6 + 29°53'059					☉'s Anom col. 7 + 1°9'76					☉'s Anom col. 8 + 59°06'117					☉'s Anom col. 9 + 88°59'176					☉'s Anom col. 10 + 118°12'235				
									☉'s Anom col. 6 + 29°53'059					☉'s Anom col. 7 + 1°9'76					☉'s Anom col. 8 + 59°06'117					☉'s Anom col. 9 + 88°59'176					☉'s Anom col. 10 + 118°12'235				
									☉'s Anom col. 6 + 29°53'059					☉'s Anom col. 7 + 1°9'76					☉'s Anom col. 8 + 59°06'117					☉'s Anom col. 9 + 88°59'176					☉'s Anom col. 10 + 118°12'235				
					Vaisakha					Jyeshtha					Ashada					Sravana					Bhadrapada								
					Week-day					Week-day					Week-day					Week-day					Week-day								
					Month					Month					Month					Month					Month								
					Day					Day					Day					Day					Day								
					Fraction					Fraction					Fraction					Fraction					Fraction								
					Week-day					Week-day					Week-day					Week-day					Week-day								
					Month					Month					Month					Month					Month								
					Day					Day					Day					Day					Day								
4920	1876	1741	11A	·6611	13·0182	7·492	1819	6	7	Ap	24	·68	2	My	21	·21	3	Je	22	·74	5	Jl	22	·27	6	Au	20	·80					
4921	1877	1742	10A	·9199	2·1265	3·649	1820	7	5	Ap	13	·05	6	My	12	·58	2	Jl	10	·64	4	Au	9	·17	5	S	7	·0					
4922	1878	1743	11A	·1787	20·7654	1·783	1821	2	3	My	1	·94	5	My	31	·47	7	Je	30	·00	1	Jl	29	·54	3	Au	28	·0					
4923	1879	1744	11A	·4374	9·8737	25·495	1822	3	1	Ap	21	·31	2	My	20	·84	4	Je	19	·37	5	Jl	18	·90	7	Au	17	·0					
4924	1880	1745	11A	·6962	28·5126	23·628	1823	4	7	My	10	·21	1	Je	8	·74	3	Jl	8	·27	4	Au	6	·80	6	S	5	·0					
4925	1881	1746	10A	·9549	17·6209	19·785	1824	5	4	Ap	28	·58	6	My	28	·11	7	Je	28	·64	2	Jl	26	·17	3	Au	24	·0					
4926	1882	1747	11A	·2137	6·7292	15·942	1825	7	1	Ap	17	·94	3	My	17	·17	5	Je	16	·00	6	Jl	15	·53	2	S	12	·0					
4927	1883	1748	11A	·4724	25·3681	14·076	1826	1	7	My	6	·84	2	Je	5	·37	3	Jl	4	·90	5	Au	3	·43	6	S	1	·0					
4928	1884	1749	11A	·7312	14·4764	10·233	1827	2	5	Ap	26	·21	6	My	25	·74	1	Je	24	·27	2	Jl	23	·80	4	Au	22	·0					
4929	1885	1750	10A	·9899	3·5847	6·390	1828	3	2	Ap	14	·57	4	My	14	·10	5	Je	12	·64	1	Au	10	·70	3	S	9	·0					
4930	1886	1751	11A	·2487	22·2236	4·523	1829	5	1	My	3	·47	3	Je	2	·00	4	Jl	1	·53	6	Jl	31	·06	7	Au	29	·0					
4931	1887	1752	11A	·5075	11·3319	0·681	1830	6	5	Ap	22	·84	7	My	22	·37	1	Je	20	·90	3	Jl	20	·43	4	Au	18	·0					
4932	1888	1753	11A	·7662	0·4402	24·392	1831	7	3	Ap	12	·21	6	Je	10	·27	7	Jl	9	·80	2	Au	8	·33	3	S	6	·0					
4933	1889	1754	11A	·0250	19·0791	22·526	1832	1	2	Ap	30	·10	3	My	29	·63	5	Je	28	·16	6	Jl	27	·70	1	Au	26	·0					
4934	1890	1755	11A	·2837	8·1874	18·683	1833	3	6	Ap	19	·47	1	My	19	·00	2	Je	17	·53	4	Jl	17	·06	5	Au	15	·0					
4935	1891	1756	11A	·5425	26·8263	16·816	1834	4	5	My	8	·37	6	Je	6	·90	1	Jl	6	·43	2	Au	4	·96	4	S	3	·0					
4936	1892	1757	11A	·8012	15·9346	12·973	1835	5	2	Ap	27	·74	4	My	27	·27	5	Je	25	·80	7	Jl	25	·33	1	Au	23	·0					
4937	1893	1758	11A	·0600	5·0429	9·131	1836	6	7	Ap	16	·10	1	My	15	·63	3	Je	14	·16	6	Au	12	·22	7	S	10	·0					
4938	1894	1759	11A	·3188	23·6819	7·264	1837	1	6	My	5	·00	7	Je	3	·53	2	Jl	3	·06	3	Au	1	·59	5	Au	31	·0					
4939	1895	1760	11A	·5775	12·7900	3·421	1838	2	3	Ap	24	·37	4	My	23	·90	6	Je	22	·43	7	Jl	21	·96	2	Au	20	·0					
4940	1896	1761	11A	·8363	1·8983	27·133	1839	3	7	Ap	13	·73	2	My	13	·26	5	Jl	11	·33	6	Au	9	·86	1	S	8	·0					
4941	1897	1762	11A	·0950	20·5372	25·266	1840	4	6	My	1	·63	1	My	31	·16	2	Je	29	·69	4	Jl	29	·22	5	Au	27	·0					
4942	1898	1763	11A	·3538	9·6455	21·424	1841	6	4	Ap	21	·00	5	My	20	·53	7	Je	19	·06	1	Jl	18	·59	3	Au	17	·0					
4943	1899	1764	11A	·6125	28·2844	19·557	1842	7	2	My	9	·90	4	Je	8	·43	5	Jl	7	·96	7	Au	6	·49	2	S	5	·0					
4944	1900	1765	11A	·8713	17·3927	15·714	1843	1	7	Ap	29	·26	1	My	28	·79	3	Je	27	·32	4	Jl	26	·86	6	Au	25	·0					
4945	1901	1766	11A	·1300	6·5010	11·871	1844	2	4	Ap	17	·63	6	My	17	·16	7	Je	15	·69	2	Jl	15	·22	5	S	12	·0					
4946	1902	1767	11A	·3888	25·1399	10·004	1845	4	3	My	6	·53	5	Je	5	·06	6	Jl	4	·59	1	Au	3	·12	2	S	1	·0					
4947	1903	1768	11A	·6476	14·2482	6·162	1846	5	7	Ap	25	·90	2	My	25	·43	3	Je	23	·96	5	Jl	23	·49	7	Au	22	·0					
4948	1904	1769	11A	·9063	3·3565	2·319	1847	6	5	Ap	15	·26	6	My	14	·79	2	Jl	12	·85	4	Au	11	·38	5	S	9	·0					
4949	1905	1770	11A	·1651	21·9954	0·452	1848	7	4	My	3	·16	5	Je	1	·69	7	Jl	1	·22	1	Jl	30	·75	3	Au	29	·0					
4950	1906	1771	11A	·4238	11·1037	24·164	1849	2	1	Ap	22	·53	3	My	22	·06	4	Je	20	·59	6	Jl	20	·12	7	Au	18	·0					
4951	1907	1772	11A	·6826	0·2120	20·321	1850	3	5	Ap	11	·89	1	Je	9	·96	3	Jl	9	·49	5	Au	8	·02	6	S	6	·0					
4952	1908	1773	11A	·9413	18·8509	18·454	1851	4	4	Ap	30	·79	6	My	30	·32	7	Je	28	·85	2	Jl	28	·38	3	Au	26	·0					
4953	1909	1774	11A	·2001	7·9592	14·612	1852	5	2	Ap	19	·16	3	My	18	·69	5	Je	17	·22	6	Jl	16	·75	1	Au	15	·0					
4954	1910	1775	11A	·4589	26·5981	12·745	1853	7	1	My	8	·06	2	Je	6	·59	4	Jl	6	·12	5	Au	4	·65	7	S	3	·0					
4955	1911	1776	11A	·7176	15·7064	8·902	1854	1	5	Ap	27	·42	6	My	26	·95	1	Je	25	·48	3	Jl	25	·01	4	Au	23	·0					
4956	1912	1777	11A	·9764	4·8147	5·060	1855	2	2	Ap	16	·79	4	My	16	·32	5	Je	14	·85	1	Au	12	·91	3	S	11	·0					
4957	1913	1778	11A	·2351	23·4535	3·193	1856	3	1	My	4	·69	3	Je	3	·22	4	Jl	2	·75	6	Au	1	·28	7	Au	30	·0					
4958	1914	1779	11A	·4939	12·5618	26·905	1857	5	6	Ap	24	·06	7	My	23	·59	2	Je	22	·12	3	Jl	21	·65	5	Au	20	·0					
4959	1915	1780	11A	·7526	1·6701</																												

rya Siddhanta.

147·65293	+ 177·18353	+ 206·71411		+ 236·24470		+ 265·77529	+ 295·30588	{ +324·83647 +354·36705 +21·736 +23·712																	
9·880	+ 11·856	+ 13·832		+ 15·808		+ 17·784	+ 19·760																		
Asvina			Kartika			Margasira			A.D.	Pausha			A.D.	Magha			Phalguna			Chaitra					
Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction			
S	19●○	·33	2 O	18	·86	4 N	17	·39				5 D	16	·92	20	7 Jr	15	·45	1 F	13	·98	3 Mr	14○	·52	
O	7	·23	1 N	5	·76	3 D	5	·29	21			4 Jr	3	·82		6 F	2	·35	7 Mr	3●	·88	2 Ap	2	·41	
S	26	·60	6 O	26	·13	7 N	24	·66				2 D	24	·19	22	3 Jr	22○	·72	5 F	21	·25	6 Mr	22	·78	
S	15	·96	5 N	14	·02	6 D	13	·56				Pausha			23	1 Jr	12○	·09	2 F	10●	·62	{	4 Mr	12	·15
O	15	·49									Kshaya										5 Ap		10	·68	
O	4	·86	2 N	3	·39	3 D	2	·92	24			5 Jr	1○	·45		6 Jr	30	·98	1 F	29	·51	3 Mr	30	·04	
S	23	·23	6 O	22	·76	1 N	21	·29				2 D	20●	·82	25	4 Jr	19	·55	5 F	17	·88	7 Mr	19	·41	
O	12	·13	5 N	10○	·66	7 D	10	·19	26			1 Jr	8	·72		3 F	7	·25	4 Mr	8	·78	6 Ap	7	·31	
O	1	·49	3 O	31○	·02	4 N	29	·55				6 D	29	·08	27	7 Jr	27	·62	2 F	26	·15	3 Mr	27	·68	
S	20	·86	7 O	20○	·39	1 N	18	·92				3 D	18	·45	28	4 Jr	16	·98	6 F	15	·51	1 Mr	16	·04	
O	8●	·76	6 N	7	·29	7 D	6	·82	29			2 Jr	5	·35		3 F	3	·88	5 Mr	5○	·41	6 Ap	3	·94	
S	8●	·12	3 O	27	·66	5 N	26	·19				6 D	25	·72	30	1 Jr	24	·25	2 F	22●○	·78	4 Mr	24	·31	
S	17	·49	1 O	17	·02	2 N	15	·55				4 D	15	·08	31	5 Jr	13	·61	7 F	12○	·14	1 Mr	13	·68	
O	6	·39	6 N	4	·92	1 D	4	·45	32			2 Jr	2	·98		4 F	1	·51	6 Mr	2	·04	7 Mr	31	·57	
S	24	·76	4 O	24	·29	5 N	22	·82				7 D	22○	·35	33	1 Jr	20	·88	3 F	19	·41	4 Mr	20	·94	
O	13	·65	3 N	12	·18	4 D	11○	·72	34			6 Jr	10	·25		7 F	8	·78	2 Mr	10	·31	3 Ap	8	·84	
O	3	·02	7 N	1	·55	2 D	1○	·08				3 D	30	·61	35	5 Jr	29	·14	6 F	27	·67	1 Mr	29	·20	
S	22	·39	4 O	21	·92	6 N	20●	·45				7 D	19	·98	36	2 Jr	18	·51	4 F	17	·04	5 Mr	17	·57	
O	10○	·29	3 N	8●	·82	5 D	8	·35	37			6 Jr	6	·88		1 F	5	·41	2 Mr	6	·94	4 Ap	5○	·47	
S	29○	·65	1 O	29	·18	2 N	27	·71				4 D	27	·24	38	5 Jr	25	·78	7 F	24	·31	1 Mr	25○	·84	
S	19○	·02	5 O	18	·55	7 N	17	·08				1 D	16	·61	39	3 Jr	15	·14	4 F	13	·67	6 Mr	15	·20	
O	7	·92	4 N	6	·45	5 D	5	·98	40			7 Jr	4	·51		2 F	3○	·04	3 Mr	3●	·57	5 Ap	2	·10	
S	26	·28	1 O	25	·82	3 N	24	·35				4 D	23	·88	41	6 Jr	22○	·41	7 F	20	·94	2 Mr	22	·47	
S	15	·65	7 N	13	·71	2 D	13	·24	42			3 Jr	11○	·77		5 F	10	·30	6 Mr	11	·84	1 Ap	10	·37	
O	15	·18																							
O	4	·55	5 N	3	·08	6 D	2	·61	43			1 Jr	1	·14		2 Jr	30	·67	4 Mr	1	·20	5 Mr	30	·73	
S	23	·92	2 O	23	·45	3 N	21○	·98				5 D	21●	·51	44	7 Jr	20	·04	1 F	18	·57	3 Mr	19	·10	
O	11	·81	1 N	10○	·34	2 D	9	·88	45			4 Jr	8	·41		5 F	6	·94	7 Mr	8	·47	2 Ap	7	·00	
O	1	·18	5 O	30○	·71	7 N	29	·24				1 D	28	·77	46	3 Jr	27	·30	4 F	25	·83	6 Mr	27	·36	
S	20	·55	3 O	20●	·08	4 N	18	·61				6 D	18	·14	47	7 Jr	16	·67	2 F	15	·20	3 Mr	16○	·73	
O	9●	·45	1 N	7	·98	3 D	7	·51	48			5 Jr	6	·04		6 F	4	·57	1 Mr	5○	·10	2 Ap	3	·63	
S	27●	·81	6 O	27	·34	7 N	25	·87				2 D	25	·40	49	3 Jr	23	·94	5 F	22●○	·47	7 Mr	24	·00	
S	17	·18	3 O	16	·71	5 N	15	·24				6 D	14	·77	50	1 Jr	13	·30	2 F	11●	·83	4 Mr	13	·36	
O	6	·08	2 N	4	·61	4 D	4	·14	51			5 Jr	2○	·67		7 F	1	·20	1 Mr	2	·73	3 Ap	1	·26	
S	25	·44	6 O	24	·98	1 N	23	·51				3 D	23○	·04	52	4 Jr	21	·57	6 F	20	·10	7 Mr	20	·63	
O	13	·34	5 N	11	·87	7 D	11●○	·40	53			1 Jr	9	·93		3 F	8	·46	5 Mr	10	·00	6 Ap	8	·53	
O	2	·71	3 N	1	·24	4 N	30	·77				6 D	30	·30	54	7 Jr	28	·83	2 F	27	·36	3 Mr	28	·89	
S	22	·08	7 O	21○	·61	2 N	20	·14				3 D	19	·67	55	5 Jr	18	·20	6 F	16	·73	1 Mr	18	·26	
O	10○	·97	6 N	9	·50	1 D	9	·04	56			2 Jr	7	·57		4 F	6	·10	5 Mr	6	·63	7 Ap	5●○	·16	
S	29●○	·34	3 O	28	·87	5 N	27	·40				6 D	26	·93	57	1 Jr	25	·46	2 F	23	·99	4 Mr	25	·52	
S	18●	·71	1 O	18	·24	2 N	16	·77				4 D	16	·30	58	5 Jr	14	·83	7 F	13○	·36	1 Mr	14●	·89	
O	7	·61	7 N	6	·14	1 D	5	·67	59			3 Jr	4	·20		4 F	2○	·73	6 Mr	4	·26	7 Ap	2	·79	

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A. D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A. D.	☉'s Anom. col. 6			☉'s Anom. col. 7			☉'s Anom. col. 8			☉'s Anom. col. 9			☉'s Anom. col. 10		
								Week-day of 1st January.	Vaisakha		Jyeshtha		Ashada		Sravana		Bhadrapa					
									Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day
4960	1916	1781	12A	·0114	20·3090	21·195	1859	7	2 My	2	·32	3 My	31	·85	5 Je	30	·38	6 Jl	29	·91	1 Au	28
4961	1917	1782	11A	·2702	9·4173	17·352	1860	1	6 Ap	20	·69	1 My	20	·22	2 Je	18	·75	4 Jl	18	·28	5 Au	16
4962	1918	1783	11A	·5289	28·0562	15·487	1861	3	5 My	9	·58	7 Je	8	·12	1 Jl	7	·65	3 Au	6	·18	4 S	4
4963	1919	1784	11A	·7877	17·1645	11·643	1862	4	2 Ap	28	·95	4 My	28	·48	6 Je	27	·01	7 Jl	26	·54	2 Au	25
4964	1920	1785	12A	·0464	6·2728	7·800	1863	5	7 Ap	18	·32	1 My	17	·85	3 Je	16	·38	4 Jl	15	·91	7 S	12
																		6 Au	14	·44		
4965	1921	1786	11A	·3052	24·9117	5·933	1864	6	6 My	6	·22	7 Je	4	·75	2 Jl	4	·28	3 Au	2	·81	5 S	1
4966	1922	1787	11A	·5639	14·0200	2·091	1865	1	3 Ap	25	·58	5 My	25	·11	6 Je	23	·64	1 Jl	23	·18	2 Au	21
4967	1923	1788	11A	·8227	3·1283	25·803	1866	2	7 Ap	14	·95	2 My	14	·48	5 Jl	12	·54	7 Au	11	·07	1 S	9
												4 Je	13	·01								
4968	1924	1789	12A	·0814	21·7672	23·936	1867	3	6 My	3	·85	1 Je	2	·38	2 Jl	1	·91	4 Jl	31	·44	5 Au	29
4969	1925	1790	11A	·3402	10·8755	20·093	1868	4	4 Ap	22	·22	5 My	21	·75	7 Je	20	·28	1 Jl	19	·81	3 Au	18
4970	1926	1791	11A	·5990	29·5144	16·250	1869	6	1 Ap	11	·58	4 Je	9	·64	6 Jl	9	·17	7 Au	7	·70	2 S	6
									3 My	11	·11											
4971	1927	1792	11A	·8577	18·6227	14·384	1870	7	7 Ap	30	·48	2 My	30	·01	3 Je	28	·54	5 Jl	28	·07	6 Au	26
4972	1928	1793	12A	·1165	7·7310	10·541	1871	1	4 Ap	19	·85	6 My	19	·38	7 Je	17	·91	2 Jl	17	·44	3 Au	15
																				5 S	14	
4973	1929	1794	11A	·3752	26·3698	8·674	1872	2	3 My	7	·74	5 Je	6	·28	6 Jl	5	·81	1 Au	4	·34	2 S	2
4974	1930	1795	11A	·6340	15·4781	4·831	1873	4	1 Ap	27	·11	2 My	26	·64	4 Je	25	·17	5 Jl	24	·70	7 Au	23
4975	1931	1796	11A	·8927	4·5864	0·989	1874	5	5 Ap	16	·48	7 My	16	·01	1 Je	14	·54	4 Au	12	·60	6 S	11
															3 Jl	14	·07					
4976	1932	1797	12A	·1515	23·2254	26·676	1875	6	4 My	5	·38	5 Je	3	·91	7 Jl	3	·44	1 Au	1	·97	3 Au	31
4977	1933	1798	11A	·4103	12·3336	22·834	1876	7	1 Ap	23	·74	3 My	23	·27	4 Je	21	·80	6 Jl	21	·34	7 Au	19
4978	1934	1799	11A	·6690	1·4419	18·991	1877	2	6 Ap	13	·11	7 My	12	·64	3 Jl	10	·70	5 Au	9	·23	6 S	7
												2 Je	11	·17								
4979	1935	1800	11A	·9278	20·0808	17·124	1878	3	5 My	2	·01	6 My	31	·54	1 Je	30	·07	2 Jl	29	·60	4 Au	28
4980	1936	1801	12A	·1865	9·1891	13·281	1879	4	2 Ap	21	·38	3 My	20	·91	5 Je	19	·44	6 Jl	18	·97	1 Au	17
4981	1937	1802	11A	·4453	27·8280	11·415	1880	5	1 My	9	·27	2 Je	7	·80	4 Jl	7	·33	5 Au	5	·86	7 S	4
4982	1938	1803	11A	·7040	16·9363	7·572	1881	7	5 Ap	28	·64	7 My	28	·17	1 Je	26	·70	3 Jl	26	·23	4 Au	24
4983	1939	1804	11A	·9628	6·0446	3·729	1882	1	3 Ap	18	·01	4 My	17	·54	6 Je	16	·07	7 Jl	15	·60	3 S	12
																		2 Au	14	·13		
4984	1940	1805	12A	·2216	24·6835	1·862	1883	2	1 My	6	·90	3 Je	5	·44	4 Jl	4	·97	6 Au	3	·50	1 S	2
4985	1941	1806	11A	·4803	13·7918	25·574	1884	3	6 Ap	25	·27	7 My	24	·80	2 Je	23	·33	3 Jl	22	·86	5 Au	21
4986	1942	1807	11A	·7391	2·9008	21·732	1885	5	3 Ap	14	·64	5 My	14	·17	1 Jl	12	·23	2 Au	10	·76	4 S	9
												6 Je	12	·70								
4987	1943	1808	11A	·9978	21·5390	19·865	1886	6	2 My	3	·54	4 Je	2	·07	5 Jl	1	·60	7 Jl	31	·13	1 Au	29
4988	1944	1809	12A	·2566	10·6473	16·022	1887	7	6 Ap	22	·90	1 My	22	·43	2 Je	20	·96	4 Jl	20	·50	6 Au	19
4989	1945	1810	11A	·5153	29·2862	14·155	1888	1	5 My	10	·80	7 Je	9	·33	1 Jl	8	·86	3 Au	7	·39	4 S	5
4990	1946	1811	11A	·7741	18·3945	10·313	1889	3	3 Ap	30	·17	4 My	29	·70	6 Je	28	·23	7 Jl	27	·76	2 Au	26
4991	1947	1812	12A	·0328	7·5028	6·470	1890	4	7 Ap	19	·54	2 My	19	·07	3 Je	17	·60	5 Jl	17	·13	6 Au	15
																				1 S	14	
4992	1948	1813	12A	·2916	26·1416	4·603	1891	5	6 My	8	·43	7 Je	6	·96	2 Jl	6	·49	4 Au	5	·02	5 S	3
4993	1949	1814	11A	·5504	15·2499	0·760	1892	6	3 Ap	26	·80	5 My	26	·33	6 Je	24	·86	1 Jl	24	·39	2 Au	22
4994	1950	1815	11A	·8091	4·3582	24·472	1893	1	1 Ap	16	·17	2 My	15	·70	4 Je	14	·23	7 Au	12	·29	1 S	10
															5 Jl	13	·76					
4995	1951	1816	12A	·0679	22·9971	22·605	1894	2	7 My	5	·06	1 Je	3	·59	3 Jl	3	·13	4 Au	1	·66	6 Au	31
4996	1952	1817	12A	·3266	12·1054	18·763	1895	3	4 Ap	24	·43	5 My	23	·96	7 Je	22	·49	2 Jl	22	·02	3 Au	20
4997	1953	1818	11A	·5854	1·2137	14·920	1896	4	1 Ap	12	·80	3 My	12	·33	6 Jl	10	·39	7 Au	8	·92	2 S	7
												4 Je	10	·86								
4998	1954	1819	11A	·8441	19·8526	13·053	1897	6	7 My	1	·70	2 My	31	·23	3 Je	29	·76	5 Jl	29	·29	6 Au	27

Surya Siddhanta.

+ 147·65293				+ 177·18353				+ 206·71411				+ 236·24470				+ 265·77529				+ 295·30588				{ + 324·83647 + 354·36705 + 21·736 + 23·712					
+ 0·880				+ 11·856				+ 13·832				+ 15·808				+ 17·784				+ 19·760									
Asvina				Kartika				Margasira				A.D.	Pausha				A.D.	Magha				Phalguna				Chaitra			
Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
2 S	26	·97	4 O	26	·50	6 N	25	·03					7 D	24	·56	60		2 Jr	23O	·10	3 F	21	·63	5 Mr	22	·16			
7 S	15	·34	3 N	13	·40	4 D	12	·93	61				6 Jr	11●	·46			7 F	9	·99	2 Mr	11	·52	4 Ap	10	·05			
1 O	14	·87																											
6 O	4	·24	7 N	2	·77	2 D	2O	·30					3 D	31	·83	62		5 Jr	30	·36	6 F	28	·89	1 Mr	30	·42			
3 S	23	·60	5 O	23	·14	6 N	21O	·67					1 D	21●	·20	63		2 Jr	19	·73	4 F	18	·26	5 Mr	19	·79			
2 O	12	·50	4 N	11O	·03	5 D	10	·56	64				7 Jr	9	·09			1 F	7	·62	3 Mr	8	·16	4 Ap	6	·69			
6 S	30	·87	1 O	30	·40	2 N	28	·93					4 D	28	·46	65		5 Jr	26	·99	7 F	25	·52	2 Mr	27O	·05			
4 S	20O	·24	5 O	19	·77	7 N	18	·30					1 D	17	·83	66		3 Jr	16	·36	4 F	14	·89	6 Mr	16O	·42			
3 O	9	·13	4 N	7	·66	6 D	7	·20	67				7 Jr	5	·73			2 F	4	·26	3 Mr	5●O	·79	5 Ap	4	·32			
7 S	28	·50	2 O	28	·03	3 N	26	·56					5 D	26	·09	68		6 Jr	24	·62	1 F	23	·15	2 Mr	23	·69			
4 S	16	·87	6 O	16	·40	7 N	14	·93					2 D	14	·46	69		3 Jr	12O	·99	5 F	11	·52	7 Mr	13	·05			
3 O	5	·77	5 N	4	·30	6 D	3	·83	70				1 Jr	2O	·36			2 Jr	31	·89	4 Mr	2	·42	5 Mr	31	·95			
1 S	25	·13	2 O	24	·66	4 N	23	·19					5 D	22O	·72	71		7 Jr	21	·26	1 F	19	·79	3 Mr	21	·32			
7 O	14	·03	1 N	12	·56	3 D	12●	·09	72				4 Jr	10	·62			6 F	9	·15	7 Mr	9	·68	2 Ap	8	·21			
4 O	2	·40	5 O	31O	·93	7 N	30	·46					1 D	29	·99	73		3 Jr	28	·52	5 F	27	·05	6 Mr	28	·58			
1 S	21	·76	3 O	21O	·30	4 N	19	·83					6 D	19	·36	74		7 Jr	17	·89	2 F	16	·42	3 Mr	17	·95			
7 O	10●O	·66	2 N	9	·19	3 D	8	·72	75				5 Jr	7	·25			6 F	5	·78	1 Mr	7	·31	2 Ap	5●	·85			
5 S	30●	·03	6 O	29	·56	1 N	28	·09					2 D	27	·62	76		4 Jr	26	·15	5 F	24O	·68	7 Mr	25	·21			
2 S	18	·40	3 O	17	·93	5 N	16	·46					6 D	15	·99	77		1 Jr	14	·52	3 F	13O	·05	4 Mr	14●	·58			
1 O	7	·29	2 N	5	·82	4 D	5	·36	78				5 Jr	3	·89			7 F	2O	·42	1 Mr	3	·95	3 Ap	2	·48			
5 S	26	·66	7 O	26	·19	1 N	24	·72					3 D	24	·25	79		4 Jr	22●	·78	6 F	21	·31	7 Mr	22	·84			
3 S	16	·03	6 N	14	·09	7 D	13O	·62	80				2 Jr	12	·15			3 F	10	·68	5 Mr	11	·21	6 Ap	9	·74			
4 O	15	·56																											
1 O	3	·93	3 N	2	·46	4 D	1O	·99					6 D	31	·52	81		1 Jr	30	·05	2 F	28	·58	4 Mr	30	·11			
6 S	23	·29	7 O	22	·82	2 N	21O	·35					3 D	20	·88	82		5 Jr	19	·42	6 F	17	·95	1 Mr	19	·48			
5 O	12	·19	6 N	10	·72	1 D	10	·25	83				2 Jr	8	·78			4 F	7	·31	5 Mr	8	·84	7 Ap	7O	·37			
2 O	1O	·56	4 O	31	·09	5 N	29	·62					7 D	29	·15	84		1 Jr	27	·68	3 F	26	·21	4 Mr	26O	·74			
6 S	19O	·92	1 O	19	·46	2 N	17	·99					4 D	17	·52	85		6 Jr	16	·05	7 F	14	·58	2 Mr	16O	·11			
5 O	8	·82	7 N	7	·35	1 D	6	·88	86				3 Jr	5	·41			4 F	3	·94	6 Mr	5	·48	1 Ap	4	·01			
3 S	28	·19	4 O	27	·72	6 N	26	·25					7 D	25	·78	87		2 Jr	24O	·31	3 F	22	·84	5 Mr	24	·37			
7 S	17	·56	2 O	17	·09	3 N	15	·62					5 D	15	·15	88		6 Jr	13O	·68	1 F	12	·21	{ 2 Mr 12 ·74 4 Ap 11 ·27	1 Mr 31 ·64				
6 O	5	·45	7 N	3	·98	2 D	3	·52	89				4 Jr	2O	·05			5 Jr	31	·58	7 Mr	2	·11		6 Mr 21 ·00				
3 S	24	·82	5 O	24	·35	6 N	22	·88					1 D	22	·41	90		2 Jr	20	·94	4 F	19	·47	4 Ap 8 ·90					
2 O	13	·72	4 N	12O	·25	5 D	11●	·78	91				7 Jr	10	·31			1 F	8	·84	3 Mr	10	·37						
7 O	3	·09	1 N	1O	·62	3 D	1	·15					4 D	30	·68	92		6 Jr	29	·21	7 F	27	·74	2 Mr 28 ·27					
4 S	21	·45	5 O	20O	·98	7 N	19	·51					2 D	19	·04	93		3 Jr	17	·57	5 F	16	·11	6 Mr 17 ·64					
3 O	10	·35	4 N	8	·88	6 D	8	·41	94				7 Jr	6	·94			2 F	5	·47	4 Mr	7O	·00	5 Ap 5● ·53					
7 S	29●	·72	2 O	29	·25	3 N	27	·78					5 D	27	·31	95		6 Jr	25	·84	1 F	24O	·37	2 Mr 25 ·90					
5 S	19	·08	6 O	18	·61	1 N	17	·15					2 D	16	·68	96		4 Jr	15	·21	5 F	13O	·74	7 Mr 14 ·27					
3 O	·6	·98	5 N	5	·51	7 D	5	·04	97				1 Jr	3	·57			3 F	2	·10	4 Mr	3	·63	6 Ap 2 ·17					
1 S	26	·35	2 O	25	·88	4 N	24	·41					5 D	23O	·94	98		7 Jr	22●	·47	2 F	21	·00	3 Mr 22 ·53					

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.	Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapa			
									Week-day Month Day	Fraction	Week-day Month Day	Fraction	Week-day Month Day	Fraction	Week-day Month Day	Fraction	Week-day Month Day	Fraction	Week-day Month Day	Fraction	Week-day Month Day	Fraction						
4999	1955	1820	12A .1029	8-9609	9-210	1898	7	5 Ap 21	.06	6 My 20	.59	1 Je 19	.12	2 Ji 18	.65	4 Au 17												
5000	1956	1821	12A .3617	27-5998	7-344	1899	1	3 My 9	.96	5 Je 8	.49	7 Ji 8	.02	1 Au 6	.55	3 S 5												
5001	1957	1822	12A .6204	16-7081	3-504	1900	2	1 Ap 29	.33	2 My 28	.86	4 Je 27	.39	5 Ji 26	.92	7 Au 25												
5002	1958	1823	12A .8792	5-8164	27-215	1901	3	5 Ap 18	.69	7 My 18	.23	1 Je 16	.76	3 Ji 16	.29	6 S 13												
5003	1959	1824	13A .1379	24-4553	25-349	1902	4	4 My 7	.59	6 Je 6	.12	7 Ji 5	.65	2 Au 4	.18	3 S 2												
5004	1960	1825	13A .3967	13-5636	21-506	1903	5	1 Ap 26	.96	3 My 26	.49	5 Je 25	.02	6 Ji 24	.55	1 Au 23												
5005	1961	1826	12A .6554	2-6719	17-663	1904	6	6 Ap 15	.33	7 My 14	.86	3 Ji 12	.92	5 Au 11	.45	6 S 9												
5006	1962	1827	12A .9142	21-3107	15-796	1905	1	5 My 4	.22	6 Je 2	.75	1 Ji 2	.29	2 Ji 31	.82	4 Au 30												
5007	1963	1828	13A .1729	10-4190	11-954	1906	2	2 Ap 23	.59	4 My 23	.12	5 Je 21	.65	7 Ji 21	.18	1 Au 19												
5008	1964	1829	13A .4317	29-0579	10-087	1907	3	1 My 12	.49	3 Je 11	.02	4 Ji 10	.55	6 Au 9	.08	7 S 7												
5009	1965	1830	12A .6905	18-1662	6-244	1908	4	5 Ap 30	.86	7 My 30	.39	1 Je 28	.92	3 Ji 28	.45	4 Au 26												
5010	1966	1831	12A .9492	7-2745	2-401	1909	6	3 Ap 20	.22	4 My 19	.75	6 Je 18	.28	7 Ji 17	.81	3 S 14												
5011	1967	1832	13A .2080	25-9134	0-535	1910	7	2 My 9	.12	3 Je 7	.65	5 Ji 7	.18	6 Au 5	.71	1 S 4												
5012	1968	1833	13A .4667	15-0217	24-246	1911	1	6 Ap 28	.49	1 My 28	.02	2 Je 26	.55	4 Ji 26	.08	5 Au 24												
5013	1969	1834	12A .7255	4-1300	20-404	1912	2	3 Ap 16	.85	5 My 16	.39	6 Je 14	.92	2 Au 12	.98	4 S 11												
5014	1970	1835	12A .9842	22-7689	18-537	1913	4	2 My 5	.75	4 Je 4	.28	5 Ji 3	.81	7 Au 2	.34	1 Au 31												
5015	1971	1836	13A .2430	11-8772	14-694	1914	5	7 Ap 25	.12	1 My 24	.65	3 Je 23	.18	4 Ji 22	.71	6 Au 21												
5016	1972	1837	13A .5018	0-9855	10-851	1915	6	4 Ap 14	.49	7 Je 12	.55	2 Ji 12	.08	3 Au 10	.61	5 S 9												
5017	1973	1838	12A .7605	19-6244	8-985	1916	7	3 My 2	.38	4 My 31	.91	6 Je 30	.45	7 Ji 29	.93	2 Au 28												
5018	1974	1839	13A .0193	8-7327	5-142	1917	2	7 Ap 21	.75	2 My 21	.28	3 Je 19	.81	5 Ji 19	.34	6 Au 17												
5019	1975	1840	13A .2780	27-3715	3-275	1918	3	6 My 10	.65	1 Je 9	.18	2 Ji 8	.71	4 Au 7	.24	5 S 5												
5020	1976	1841	13A .5368	16-4798	26-987	1919	4	4 Ap 30	.02	5 My 29	.55	7 Je 28	.08	1 Ji 27	.61	3 Au 26												
5021	1977	1842	12A .7955	5-5881	23-144	1920	5	1 Ap 18	.38	2 My 17	.91	4 Je 16	.44	5 Ji 15	.97	2 S 13												
5022	1978	1843	13A .0543	24-2270	21-278	1921	7	7 My 7	.28	1 Je 5	.81	3 Ji 5	.34	4 Au 3	.87	6 S 2												
5023	1979	1844	13A .3130	13-3853	17-435	1922	1	4 Ap 26	.65	6 My 26	.18	7 Je 24	.71	2 Ji 24	.24	3 Au 22												
5024	1980	1845	13A .5718	2-4436	13-592	1923	2	2 Ap 16	.01	3 My 15	.55	6 Ji 13	.61	1 Au 12	.14	2 S 10												
5025	1981	1846	12A .8306	21-0825	11-725	1924	3	7 My 3	.91	2 Je 2	.44	3 Ji 1	.97	5 Ji 31	.50	7 Au 30												
5026	1982	1847	13A .0893	10-1908	7-883	1925	5	5 Ap 23	.28	6 My 22	.81	1 Je 21	.34	2 Ji 20	.87	4 Au 19												
5027	1983	1848	13A .3481	28-8297	6-016	1926	6	4 My 12	.18	5 Je 10	.71	7 Ji 10	.24	1 Au 8	.77	3 S 7												
5028	1984	1849	13A .6068	17-9380	2-173	1927	7	1 My 1	.54	3 My 31	.07	4 Je 29	.61	6 Ji 29	.14	7 Au 27												
5029	1985	1850	12A .8656	7-0463	25-885	1928	1	5 Ap 19	.91	7 My 19	.44	1 Je 17	.97	3 Ji 17	.50	6 S 14												
5030	1986	1851	13A .1243	25-9852	24-018	1929	3	4 My 8	.81	6 Je 7	.34	7 Ji 6	.87	2 Au 5	.40	3 S 3												
5031	1987	1852	13A .3831	14-7935	20-175	1930	4	2 Ap 28	.18	3 My 27	.71	5 Je 26	.24	6 Ji 25	.77	1 Au 24												
5032	1988	1853	13A .6419	3-9018	16-333	1931	5	6 Ap 17	.54	1 My 17	.07	2 Je 15	.60	5 Au 13	.67	7 S 12												
5033	1989	1854	12A .9006	22-5406	14-467	1932	6	5 My 5	.44	6 Je 3	.97	1 Ji 3	.50	3 Au 2	.93	4 Au 31												
5034	1990	1855	13A .1594	11-6489	10-623	1933	1	2 Ap 24	.81	4 My 24	.34	5 Je 22	.87	7 Ji 22	.40	1 Au 20												
5035	1991	1856	13A .4181	0-7572	6-780	1934	2	7 Ap 14	.17	3 Je 12	.24	4 Ji 11	.77	6 Au 10	.30	7 S 8												
5036	1992	1857	13A .6769	19-3962	4-914	1935	3	6 My 3	.07	7 Je 1	.60	2 Ji 1	.13	3 Ji 30	.66	5 Au 29												
5037	1993	1858	12A .9356	8-5044	1-071	1936	4	3 Ap 21	.44	4 My 20	.97	6 Je 19	.50	1 Ji 19	.93	2 Au 17												

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+ 147.65293	+ 177.18353	+ 206.71411		+ 236.24470		+ 265.77529	+ 295.30588	+ 324.83647
+ 9.880	+ 11.856	+ 13.832		+ 15.808		+ 17.784	+ 19.760	+ 354.36705
								+ 21.736
								+ 23.712
Asvina	Kartika	Margasira	A.D.	Pausha	A.D.	Magha	Phalguna	Chaitra
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction		Week-day Month Day Fraction		Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction
5 S 15 .72	1 N 13 .78	3 D 13○ .31	99	4 Jr 11 .84		6 F 10 .37	7 Mr 11 .90	2 Ap 10 .43
7 O 15 .25								
4 O 4 .61	6 N 3 .14	7 D 2○ .67	19	2 Jr 1 .21	00	3 Jr 30 .74	5 Mr 1 .27	6 Mr 30 .80
1 S 23 .98	3 O 23 .51	5 N 22● .04		6 D 21 .57	01	1 Jr 20 .10	2 F 18 .63	4 Mr 20 .16
7 O 12○ .88	2 N 11● .41	3 D 10 .94	02	5 Jr 9 .47		7 F 8 .00	1 Mr 9 .53	3 Ap 8○ .06
5 O 2○ .25	6 O 31● .78	1 N 30 .31		2 D 29 .84	03	4 Jr 28 .37	5 F 26 .90	7 Mr 28○ .43
2 S 21● .61	4 O 21 .14	5 N 19 .67		7 D 19 .20	04	1 Jr 17 .73	3 F 16 .27	4 Mr 16● .80
1 O 9 .51	3 N 8 .04	4 D 7 .57	05	6 Jr 6 .10		7 F 4○ .63	2 Mr 6 .16	3 Ap 4 .69
5 S 28 .88	7 O 28 .41	1 N 26 .94		3 D 26 .47	06	5 Jr 25○ .00	6 F 23 .53	1 Mr 25 .06
3 S 18 .24	4 O 17 .77	6 N 16 .31		7 D 15 .84	07	2 Jr 14● .37	3 F 12 .90	5 Mr 14 .43
								6 Ap 12 .96
2 O 7 .14	3 N 5 .67	5 D 5 .20	08	6 Jr 3 .73		1 F 2 .26	2 Mr 2 .79	4 Ap 1 .33
6 S 25 .51	1 O 25 .04	2 N 23 .57		4 D 23● .10	09	5 Jr 21 .63	7 F 20 .16	1 Mr 21 .69
5 O 14 .41	6 N 12○ .94	1 D 12 .47	10	3 Jr 11 .00		4 F 9 .53	6 Mr 11 .06	7 Ap 9 .59
2 O 3 .77	4 N 2● .30	5 D 1 .83		7 D 31 .37	11	1 Jr 29 .90	3 F 28 .43	4 Mr 29 .96
7 S 23 .14	1 O 22● .67	3 N 21 .20		4 D 20 .73	12	6 Jr 19 .26	7 F 17 .79	2 Mr 18○ .32
6 O 11● .04	7 N 9 .57	2 D 9 .10	13	3 Jr 7 .63		5 F 6 .16	6 Mr 7○ .69	1 Ap 6 .22
3 S 30 .41	4 O 29 .94	6 N 28 .47		1 D 28 .00	14	2 Jr 26 .53	4 F 25○ .06	5 Mr 26 .59
7 S 19 .77	2 O 19 .30	3 N 17 .83		5 D 17 .36	15	6 Jr 15 .89	1 F 14● .43	2 Mr 15 .96
6 O 8 .67	1 N 7 .20	2 D 6 .73	16	4 Jr 5○ .26		5 F 3● .79	7 Mr 4 .32	1 Ap 2 .85
4 S 27 .04	5 O 26 .57	7 N 25 .10		1 D 24○ .63	17	3 Jr 23● .16	4 F 21 .69	6 Mr 23 .22
2 O 15 .93	4 N 14 .47	6 D 14○ .00	18	7 Jr 12 .53		2 F 11 .06	3 Mr 12 .59	5 Ap 11 .12
7 O 5 .30	1 N 3 .83	3 D 3● .36	19	4 Jr 1 .89		6 Jr 31 .42	7 Mr 1 .95	2 Mr 31 .49
4 S 24 .67	6 O 24○ .20	7 N 22● .73		2 D 22 .26	20	3 Jr 20 .79	5 F 19 .32	6 Mr 19 .85
3 O 12○ .57	5 N 11● .10	6 D 19 .63	21	1 Jr 9 .16		2 F 7 .69	4 Mr 9 .22	5 Ap 7○ .75
7 O 1● .93	2 O 31 .46	3 N 29 .99		5 D 29 .53	22	7 Jr 28 .06	1 F 26 .59	3 Mr 28● .12
5 S 21 .30	6 O 20 .83	1 N 19 .36		2 D 18 .89	23	4 Jr 17 .42	5 F 15○ .95	7 Mr 17● .48
4 O 10 .20	5 N 8 .73	7 D 8 .26	24	1 Jr 6 .79		3 F 5○ .32	4 Mr 5 .85	6 Ap 4 .38
1 S 28 .57	3 O 28 .10	4 N 26 .63		6 D 26 .16	25	7 Jr 24● .69	2 F 23 .22	3 Mr 24 .75
5 S 17 .93	7 O 17 .46	1 N 15 .99		3 D 15 .52	26	5 Jr 14● .05	6 F 12 .59	1 Mr 14 .12
								2 Ap 12 .65
4 O 6 .83	6 N 5 .36	7 D 4○ .89	27	2 Jr 3 .42		3 F 1 .95	5 Mr 3 .48	7 Ap 2 .01
2 S 26 .20	3 O 25 .73	5 N 24○ .26		6 D 23 .79	28	1 Jr 22 .32	2 F 20 .85	4 Mr 21 .38
1 O 14 .09	2 N 12● .63	4 D 12 .16	29	5 Jr 10 .69		7 F 9 .22	1 Mr 10 .75	3 Ap 9 .28
5 O 3 .46	6 N 1● .99	1 D 1 .52		3 D 31 .05	30	4 Jr 29 .58	6 F 28 .11	7 Mr 29○ .65
2 S 22○ .83	4 O 22 .36	5 N 20 .89		7 D 20 .42	31	1 Jr 18 .95	3 F 17 .48	5 Mr 19○ .01
1 O 11 .73	3 N 10 .26	4 D 9 .79	32	6 Jr 8 .32		7 F 6 .85	2 Mr 7○ .38	3 Ap 5 .91
6 S 30 .09	7 O 29 .62	2 N 28 .15		3 D 27 .69	33	5 Jr 26 .22	6 F 24● .75	1 Mr 26 .28
3 S 19 .46	4 O 18 .99	6 N 17 .52		1 D 17 .05	34	2 Jr 15○ .58	4 F 14● .11	5 Mr 15 .64
2 O 8 .36	3 N 6 .89	5 D 6 .42	35	6 Jr 4○ .95		1 F 3 .48	3 Mr 5 .01	4 Ap 3 .54
6 S 27 .73	1 O 27 .26	2 N 25 .79		4 D 25○ .32	36	5 Jr 23 .85	7 F 22 .38	1 Mr 22 .91
5 O 15 .62	7 N 14 .15	1 D 13 .68	37	3 Jr 12 .21		4 F 10 .75	6 Mr 12 .28	7 Ap 10 .81

NOTE.—From 1930 A.D. to 1999 A.D. all eclipses of the Sun, visible anywhere in the world, are shown. From 1 B.C. to 300 A.D. the same observation applies. Between 300 A.D. and 1900 A.D. only those eclipses of the Sun which are visible in India are entered in this table.

TABLE X

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	Month and day A.D. Fraction of day.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	Week-day of 1st January.				☉'s Anom col. 6				☾'s Anom col. 7				+ 29-53059				+ 59-06117				+ 88-59176				+ 118-122				
								Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapad												
								Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction
5038	1994	1859	13A	1944	27-1433	26-759	1937	6	2	My	10	34	3	Je	8	87	5	Jl	8	40	6	Au	6	93	1	S	5									
5039	1995	1860	13A	1945	16-2516	22-916	1938	7	6	Ap	29	70	1	My	29	23	2	Je	27	77	4	Jl	27	30	5	Au	25									
5040	1996	1861	13A	1946	5-3599	19-073	1939	1	4	Ap	19	07	5	My	18	60	7	Je	17	13	1	Jl	16	66	4	S	13									
																						3	Au	15	19											
5041	1997	1862	12A	1947	23-9988	17-207	1940	2	2	My	6	97	4	Je	5	50	6	Jl	5	03	7	Au	3	56	2	S	2									
5042	1998	1863	13A	1948	13-1071	13-364	1941	4	7	Ap	26	34	1	My	25	87	3	Je	24	40	4	Jl	23	93	6	Au	22	0								
5043	1999	1864	13A	1949	2-2154	9-521	1942	5	4	Ap	15	70	6	My	15	23	2	Jl	13	29	3	Au	11	0	83	5	S	10	0							
													7	Je	13	76																				
5044	2000	1865	13A	1950	20-8543	7-654	1943	6	3	My	4	60	5	Je	3	13	6	Jl	2	66	1	Au	1	0	19	2	Au	30								
5045	2001	1866	13A	1951	9-9626	3-812	1944	7	7	Ap	22	97	2	My	22	50	4	Je	21	03	5	Jl	20	0	56	7	Au	19								
5046	2002	1867	13A	1952	28-6614	1-845	1945	2	6	My	11	86	1	Je	10	39	2	Jl	9	93	4	Au	8	46	5	S	6									
5047	2003	1868	13A	1953	17-7097	25-657	1946	3	4	My	1	23	5	My	30	76	7	Je	29	29	1	Jl	28	82	3	Au	27									
5048	2004	1869	13A	1954	6-8180	21-814	1947	4	1	Ap	20	60	3	My	20	13	4	Je	18	66	6	Jl	18	19	2	S	15									
																						7	Au	16	72											
5049	2005	1870	13A	1955	25-4569	19-947	1948	5	7	My	8	50	2	Je	7	03	3	Jl	6	56	5	Au	5	09	6	S	3									
5050	2006	1871	13A	1956	14-5652	16-104	1949	7	4	Ap	27	86	6	My	27	39	7	Je	25	92	2	Jl	25	45	3	Au	23									
5051	2007	1872	13A	1957	3-6735	12-262	1950	1	2	Ap	17	23	3	My	16	76	5	Je	15	29	1	Au	13	35	2	S	11	0								
													6	Jl	14	82																				
5052	2008	1873	13A	1958	22-3124	10-395	1951	2	1	My	6	13	2	Je	4	66	4	Jl	4	19	5	Au	2	72	7	S	1	0								
5053	2009	1874	13A	1959	11-4207	6-552	1952	3	5	Ap	24	49	7	My	24	03	1	Je	22	56	3	Jl	22	0	09	4	Au	20	0							
5054	2010	1875	13A	1960	0-5290	2-709	1953	5	2	Ap	13	86	5	Je	11	92	7	Jl	11	0	45	1	Au	9	98	3	S	8								
								4	My	13	39																									
5055	2011	1876	13A	1961	19-1679	0-843	1954	6	1	My	2	76	3	Je	1	29	4	Je	30	0	82	6	Jl	30	35	7	Au	28								
5056	2012	1877	13A	1962	8-2762	24-554	1955	7	6	Ap	22	13	7	My	21	66	2	Je	20	0	19	3	Jl	19	72	5	Au	18								
																									6	S	16									
5057	2013	1878	13A	1963	26-9151	22-688	1956	1	5	My	10	02	6	Je	8	55	1	Jl	8	09	2	Au	6	62	4	S	5									
5058	2014	1879	13A	1964	16-0234	18-845	1957	3	2	Ap	29	39	3	My	28	92	5	Je	27	45	6	Jl	26	98	1	Au	25									
5059	2015	1880	13A	1965	5-1317	15-002	1958	4	6	Ap	18	0	1	My	18	29	2	Je	16	82	4	Jl	16	35	7	S	13									
																						5	Au	14	88											
5060	2016	1881	13A	1966	23-7705	13-135	1959	5	5	My	7	66	7	Je	6	19	1	Jl	5	72	3	Au	4	25	4	S	2	0								
5061	2017	1882	13A	1967	12-8788	9-293	1960	6	3	Ap	26	02	4	My	25	55	6	Je	24	08	7	Jl	23	61	2	Au	22	0								
5062	2018	1883	13A	1968	1-9871	5-450	1961	1	7	Ap	15	39	1	My	14	92	4	Jl	12	98	6	Au	11	0	51	1	S	10								
													3	Je	13	45																				
5063	2019	1884	13A	1969	20-6260	3-583	1962	2	6	My	4	29	7	Je	2	82	2	Jl	2	35	3	Jl	31	0	88	5	Au	30								
5064	2020	1885	13A	1970	9-7343	27-295	1963	3	3	Ap	23	65	5	My	23	19	6	Je	21	0	72	1	Jl	21	25	2	Au	19								
5065	2021	1886	13A	1971	28-3732	25-429	1964	4	2	My	11	55	4	Je	10	08	5	Jl	9	61	7	Au	8	14	1	S	6									
5066	2022	1887	13A	1972	17-4815	21-586	1965	6	6	Ap	30	92	1	My	30	45	2	Je	28	98	4	Jl	28	51	6	Au	27									
5067	2023	1888	13A	1973	6-5898	17-743	1966	7	4	Ap	20	29	5	My	19	0	7	Je	18	35	1	Jl	17	88	4	S	14									
																						3	Au	16	41											
5068	2024	1889	13A	1974	25-2287	15-876	1967	1	3	My	9	18	4	Je	7	71	6	Jl	7	25	7	Au	5	78	2	S	4									
5069																																				

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+ 147.65293	+ 177.18353	+ 206.71411		+ 236.24470		+ 265.77529	+ 295.30588	{ +324.83647 +354.36705 +21.736 +23.712	
+ 9.880	+ 11.856	+ 13.832		+ 15.808		+ 17.784	+ 19.760		
Asvina	Kartika	Margasira	A.D.	Pausha	A.D.	Magha	Phalguna	Chaitra	
Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction		Week-day Month Day Fraction		Week-day Month Day Fraction	Week-day Month Day Fraction	Week-day Month Day Fraction	
2 O 4 .99	4 N 30 .52	6 D 30 .05	38	7 Jr 1 .58		2 Jr 31 .11	3 Mr 1 .64	5 Mr 31 .17	
7 S 24 .36	1 O 23 .89	3 N 22 .42		4 D 21 .95	39	6 Jr 20 .48	1 F 19 .01	2 Mr 20 .54	
6 O 130 .25	7 N 11 .79	2 D 11 .32	40	3 Jr 9 .85		5 F 8 .38	6 Mr 8 .91	1 Ap 70 .44	
3 O 10 .62	5 O 31 .15	6 N 29 .68		1 D 29 .21	41	2 Jr 27 .74	4 F 260 .27	5 Mr 27 .81	
7 S 200 .99	2 O 20 .52	4 N 19 .05		5 D 18 .58	42	7 Jr 17 .11	1 F 150 .64	3 Mr 17 .17	
6 O 9 .89	1 N 8 .42	2 D 7 .95	43	4 Jr 6 .48		6 F 500 .01	7 Mr 6 .54	2 Ap 5 .07	
4 S 29 .25	5 O 28 .78	7 N 27 .31		1 D 26 .85	44	3 Jr 250 .38	4 F 23 .91	6 Mr 24 .44	
1 S 17 .62	3 O 17 .15	4 N 15 .68		6 D 150 .21	45	7 Jr 130 .74	2 F 12 .27	3 Mr 13 .80	
7 O 6 .52	2 N 5 .05	3 D 40 .58	46	5 Jr 3 .11		6 F 1 .64	1 Mr 3 .17	2 Ap 1 .70	
4 S 25 .88	6 O 25 .41	7 N 230 .95		2 D 23 .48	47	4 Jr 22 .01	5 F 20 .54	7 Mr 22 .07	
3 O 14 .78	5 N 13 .31	6 D 12 .84	48	1 Jr 11 .37		2 F 9 .90	4 Mr 10 .43	5 Ap 80 .97	
1 O 30 .15	2 N 10 .68	4 D 1 .21		5 D 30 .74	49	7 Jr 29 .27	1 F 27 .80	3 Mr 290 .33	
5 S 220 .52	7 O 22 .05	1 N 20 .58		3 D 20 .11	50	4 Jr 18 .64	6 F 17 .17	7 Mr 180 .70	
4 O 11 .41	5 N 9 .94	7 D 9 .47	51	2 Jr 8 .01		3 F 6 .54	5 Mr 8 .07	6 Ap 6 .60	
1 S 30 .78	3 O 30 .31	4 N 28 .84		6 D 28 .37	52	7 Jr 260 .90	2 F 250 .43	3 Mr 25 .96	
6 S 19 .15	7 O 18 .68	2 N 17 .21		3 D 16 .74	53	5 Jr 150 .27	6 F 130 .80	1 Mr 15 .33	
5 O 8 .05	6 N 6 .58	1 D 6 .11	54	2 Jr 40 .64		4 F 3 .17	5 Mr 4 .70	7 Ap 3 .23	
2 S 27 .41	3 O 26 .94	5 N 25 .47		7 D 250 .00	55	1 Jr 23 .53	3 F 22 .07	4 Mr 23 .60	
1 O 16 .31	2 N 140 .84	4 D 140 .37	56	5 Jr 12 .90		7 F 11 .43	1 Mr 11 .96	3 Ap 10 .49	
5 O 4 .68	7 N 30 .21	1 D 20 .74	57	3 Jr 1 .27		4 Jr 30 .80	6 Mr 1 .33	7 Mr 30 .86	
3 S 24 .04	4 O 230 .57	6 N 22 .10		7 D 21 .64	58	2 Jr 20 .17	3 F 18 .70	5 Mr 20 .23	
1 O 12 .94	3 N 11 .47	5 D 11 .00	59	6 Jr 9 .53		1 F 8 .06	2 Mr 90 .59	4 Ap 8 .12	
6 O 20 .31	7 O 31 .84	2 N 30 .37		3 D 29 .90	60	5 Jr 28 .43	6 F 260 .96	1 Mr 27 .49	
3 S 200 .68	5 O 20 .21	6 N 18 .74		1 D 18 .27	61	2 Jr 16 .80	4 F 150 .33	5 Mr 16 .86	
2 O 9 .57	4 N 8 .10	5 D 7 .63	62	7 Jr 6 .17		1 F 40 .70	3 Mr 6 .23	4 Ap 4 .76	
6 S 28 .94	1 O 28 .47	3 N 27 .00		4 D 260 .53	63	6 Jr 250 .06	7 F 23 .59	2 Mr 25 .12	
4 S 18 .31	7 N 16 .37	1 D 150 .90		Pausha		3 Jr 14 .43	4 F 12 .96	6 Mr 13 .49	
5 O 17 .84				Kshaya				1 Ap 12 .02	
3 O 6 .21	4 N 4 .74	6 D 40 .27	65	7 Jr 2 .80		2 F 1 .33	3 Mr 2 .86	5 Ap 1 .39	
7 S 25 .57	2 O 25 .10	3 N 230 .63		5 D 23 .16	66	6 Jr 21 .69	1 F 20 .23	2 Mr 21 .76	
6 O 140 .47	1 N 130 .00	2 D 12 .53	67	4 Jr 11 .06		5 F 9 .59	7 Mr 11 .12	1 Ap 90 .65	
3 O 30 .84	5 N 2 .37	6 D 1 .90		1 D 31 .43	68	2 Jr 29 .96	4 F 28 .49	6 Mr 290 .02	
1 S 220 .20	2 O 21 .73	4 N 20 .27		5 D 19 .80	69	7 Jr 18 .33	1 F 16 .86	3 Mr 180 .39	
7 O 11 .10	1 N 9 .63	3 D 9 .16	70	4 Jr 7 .69		6 F 60 .22	7 Mr 70 .75	2 Ap 6 .29	
4 S 30 .47	6 O 30 .00	7 N 28 .53		2 D 28 .06	71	3 Jr 260 .59	5 F 250 .12	6 Mr 26 .65	
1 S 19 .84	3 O 19 .37	4 N 17 .90		6 D 17 .43	72	7 Jr 150 .96	2 F 14 .49	4 Mr 15 .02	
7 O 7 .73	2 N 6 .26	3 D 5 .79	73	5 Jr 40 .33		6 F 2 .86	1 Mr 4 .39	2 Ap 2 .92	
5 S 27 .10	6 O 26 .63	1 N 250 .16		2 D 240 .69	74	4 Jr 23 .23	5 F 21 .75	7 Mr 23 .28	
4 O 16 .00	5 N 140 .53	7 D 140 .06	75	1 Jr 12 .59		3 F 11 .12	4 Mr 12 .65	6 Ap 11 .18	

TABLE X.

Kaliyuga.	Vikrama Era.	Saka Era.	Com- mence- ment of Solar Year.	First New-Moon in Solar Year.	Anomaly of first New-Moon.	A.D.	☉'s Anom col. 6 + 29°53059				☉'s Anom col. 7 + 1°976				☉'s Anom col. 8 + 59°06117				☉'s Anom col. 9 + 88°59176				☉'s Anom col. 10 + 118°12235							
							☾'s Anom col. 6 + 1°976				☾'s Anom col. 7 + 3°952				☾'s Anom col. 8 + 5°928				☾'s Anom col. 9 + 7°904											
							Vaisakha				Jyeshtha				Ashada				Sravana				Bhadrapada							
Month and day A.D.		Fraction of day.		Week-day of 1st January.		Week-day		Month		Day		Fraction		Week-day		Month		Day		Fraction		Week-day		Month		Day		Fraction		
5076	2032	1897	14A	0271	26.6868	18.617	1975	4	7	My	10●○	71	2	Je	9	24	3	Jl	8	77	5	Au	7	30	6	S	5	83	1	
5077	2033	1898	13A	2859	15.7951	14.774	1976	5	5	Ap	29●○	03	6	My	28	61	1	Je	27	14	2	Jl	26	67	4	Au	25	20	2	
5078	2034	1899	13A	5447	4.9034	10.931	1977	7	2	Ap	18●	45	3	My	17	98	5	Je	16	51	1	Au	14	57	3	S	13	10	3	
5079	2035	1900	13A	8034	23.5423	9.064	1978	1	1	My	7	34	2	Je	5	87	4	Jl	5	41	5	Au	3	94	7	S	2	4	4	
5080	2036	1901	14A	0622	12.6506	5.222	1979	2	5	Ap	26	71	7	My	26	24	1	Je	24	77	3	Jl	24	30	4	Au	22	8	5	
5081	2037	1902	13A	3209	1.7589	1.379	1980	3	3	Ap	15	08	4	My	14	61	7	Jl	12	67	2	Au	11	20	3	S	9	7	6	
5082	2038	1903	13A	5797	20.3978	27.067	1981	5	1	My	3	98	3	Je	2	51	5	Jl	2	04	6	Jl	31●	57	1	Au	30	10	7	
5083	2039	1904	13A	8384	9.5061	23.224	1982	6	6	Ap	23	34	7	My	22	87	2	Je	21	40	3	Jl	20●	93	5	Au	19	4	8	
5084	2040	1905	14A	0972	28.1450	21.357	1983	7	5	My	12	24	6	Je	10●○	77	1	Jl	10	30	2	Au	8	83	4	S	7	3	9	
5085	2041	1906	13A	3559	17.2533	17.514	1984	1	2	Ap	30	61	4	My	30●	14	5	Je	23	67	7	Jl	23	20	1	Au	26	7	10	
5086	2042	1907	13A	6147	6.3616	13.672	1985	3	6	Ap	19	97	1	My	19	51	3	Je	13	04	4	Jl	17	57	7	S	14	6	11	
5087	2043	1908	13A	8735	25.0004	11.805	1986	4	5	My	8	87	7	Je	7	40	1	Jl	6	93	3	Au	5	46	4	S	3	9	12	
5088	2044	1909	14A	1322	14.1087	7.962	1987	5	3	Ap	28	24	4	My	27	77	6	Je	26	30	7	Jl	25	83	2	Au	24	3	13	
5089	2045	1910	13A	3910	3.2170	4.119	1988	6	7	Ap	16	61	2	My	16	14	5	Jl	14	20	6	Au	12	73	1	S	11	2	14	
5090	2046	1911	13A	6497	21.8559	2.253	1989	1	6	My	5	50	1	Je	4	03	2	Jl	3	57	4	Au	2	10	5	Au	31	6	15	
5091	2047	1912	13A	9055	10.9642	25.965	1990	2	3	Ap	24	87	5	My	24	40	6	Je	22	93	1	Jl	22●○	46	2	Au	20	9	16	
5092	2048	1913	14A	1672	0.0725	22.122	1991	3	1	Ap	14	24	4	Je	12	30	5	Jl	11	83	7	Au	10	36	1	S	8	8	17	
5093	2049	1914	13A	4260	10.7114	20.255	1992	4	7	My	2	14	1	My	31	67	3	Je	30	20	4	Jl	29	73	6	Au	28	2	18	
5094	2050	1915	13A	6848	7.8197	16.412	1993	6	4	Ap	21	50	6	My	21●○	03	7	Je	19	56	2	Jl	19	09	3	Au	17	6	19	
5095	2051	1916	13A	9435	26.4586	14.546	1994	7	3	My	10●○	40	4	Je	8	93	6	Jl	8	46	7	Au	6	99	2	S	5	5	20	
5096	2052	1917	14A	2023	15.5669	10.703	1995	1	7	Ap	29●	77	2	My	29	30	3	Je	27	83	5	Jl	27	36	6	Au	25	8	21	
5097	2053	1918	13A	4610	4.6752	6.860	1996	2	5	Ap	18	13	6	My	17	67	1	Je	16	20	4	Au	14	26	5	S	12	7	22	
5098	2054	1919	13A	7198	23.3141	4.993	1997	4	4	My	7	03	5	Je	5	56	7	Jl	5	09	1	Au	3	62	3	S	2	1	23	
5099	2055	1920	13A	9785	12.4224	1.151	1998	5	1	Ap	26	40	2	My	25	93	4	Je	24	46	5	Jl	23	99	7	Au	22	5	24	
5100	2056	1921	14A	2373	1.5307	24.862	1999	6	5	Ap	15	77	7	My	15	30	3	Jl	13	36	4	Au	11●	89	6	S	10	4	25	

TABLE X—A.

Distance of Sun from the Moon's Node at the Commencement of each Solar Year.

INCREASE FOR CENTURIES.

INCREASE FOR CENTURIES.										INCREASE		
Christian Era.		Kaliyuga.	Days.			Christian Era.		Kaliyuga.	Days.	Yr.	Incr. Days.	
B.C.	1	3101	62.91	}	Modern figures	1000	4101	159.27	}	Surya	1	18.65
A.D.	100	3201	20.45		(less the	1100	4201	116.46		Siddhanta	2	37.27
	200	3301	151.30		Sodhya of	1200	4301	72.44		without bija	3	55.90
	300	3401	109.18		Surya Siddhanta).	1300	4401	29.63		but less Sodhya.	4	74.54
	400	3501	65.68			1400	4501	159.97			5	93.17
	500	3601	23.76	}	Arya Siddhanta	1500	4601	118.20	}	Surya	6	111.80
	600	3701	154.79		(less the	1600	4701	75.91		Siddhanta	7	130.44
	700	3801	112.33		Sodhya of	1700	4801	33.45		with bija	8	149.07
	800	3901	70.04		Arya Siddhanta).	1800	4901	164.12		but less Sodhya.	9	167.71
	900	4001	27.59			1900	5001	120.62			10	18.03

The Canons of Eclipses.

A Solar Eclipse is certain if ☉ from Node is between 0 and 15.598 or between 157.714 and 173.312 days.
" " doubtful " " " 15.771 " 18.198 " 157.541 " 165.114 "
" " impossible " " " 18.371 " 154.989 days.

Surya Siddhanta.

+ 147.65293				+ 177.18353				+ 206.71411				+ 236.24470				+ 265.77529				+ 295.30388				{ +324.83647											
+ 9.880				+ 11.856				+ 13.832				+ 15.808				+ 17.784				+ 19.760				{ +354.36705											
																								{ + 21.736											
																								{ + 23.712											
Asvina				Kartika				Margasira				A.D.				Pausha				A.D.				Magha				Phalguna				Chaitra			
Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction		Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction	Week-day	Month	Day	Fraction						
1 O	5	37		2 N	30	90		4 D	3	43	76	5 Jr	1	96		7 Jr	31	49	2 Mr	1	02	3 Mr	30	55											
5 S	23	73		7 O	23	26		1 N	21	79		3 D	21	32	77	4 Jr	19	85	6 F	18	39	7 Mr	19	92											
4 O	12	63		6 N	11	16		7 D	10	69	78	2 Jr	9	22		3 F	7	75	5 Mr	9	28	6 Ap	7	81											
2 O	2	00		3 O	31	53		5 N	30	06		6 D	29	59	79	1 Jr	28	12	2 F	26	65	4 Mr	28	18											
6 S	21	36		7 O	20	89		2 N	19	43		3 D	18	96	80	5 Jr	17	49	7 F	16	02	1 Mr	16	55											
5 O	9	26		6 N	7	79		1 D	7	32	81	2 Jr	5	85		4 F	4	38	5 Mr	5	91	7 Ap	4	45											
2 S	28	63		4 O	28	16		5 N	26	69		7 D	26	22	82	1 Jr	24	75	3 F	23	28	4 Mr	24	81											
7 S	18	00		3 N	16	06		4 D	15	59	83	6 Jr	14	12		Magha				7 F	12	65	3 Ap	12	71										
1 O	17	53														Kshaya				2 Mr	14	18													
5 O	6	89		7 N	5	42		1 D	4	95	84	3 Jr	3	49		5 F	2	02	6 Mr	2	55	1 Ap	1	08											
3 S	25	26		4 O	24	79		6 N	23	32		7 D	22	85	85	2 Jr	21	38	3 F	19	91	5 Mr	21	44											
2 O	14	16		3 N	12	69		5 D	12	22	86	6 Jr	10	75		1 F	9	28	2 Mr	10	81	4 Ap	9	34											
6 O	3	53		1 N	2	06		2 D	1	59		4 D	31	12	87	5 Jr	29	65	7 F	28	18	1 Mr	29	71											
3 S	22	89		5 O	22	42		6 N	20	95		1 D	20	48	88	3 Jr	19	01	4 F	17	55	6 Mr	18	08											
2 O	10	79		4 N	9	32		5 D	8	85	89	7 Jr	7	38		1 F	5	91	3 Mr	7	44	4 Ap	5	97											
7 S	30	16		1 O	29	69		3 N	28	22		4 D	27	75	90	6 Jr	26	28	7 F	24	81	2 Mr	26	34											
4 S	19	52		6 O	19	05		7 N	17	59		2 D	17	12	91	3 Jr	15	65	5 F	14	18	6 Mr	15	71											
3 O	8	42		4 N	6	95		6 D	6	48	92	1 Jr	5	01		2 F	3	54	4 Mr	4	07	5 Ap	2	61											
7 S	26	79		2 O	26	32		3 N	24	85		5 D	24	38	93	6 Jr	22	91	1 F	21	44	2 Mr	22	97											
6 O	15	69		1 N	14	22		2 D	13	75	94	4 Jr	12	28		5 F	10	81	7 Mr	12	34	1 Ap	10	87											
4 O	5	05		5 N	3	58		7 D	3	11	95	1 Jr	1	65		3 Jr	31	18	4 Mr	1	71	6 Mr	31	24											
1 S	24	42		2 O	23	95		4 N	22	48		6 D	22	01	96	7 Jr	20	54	2 F	19	07	3 Mr	19	60											
7 O	12	32		1 N	10	85		3 D	10	38	97	4 Jr	8	91		6 F	7	44	7 Mr	8	97	2 Ap	7	50											
4 O	1	69		6 O	31	22		7 N	29	75		2 D	29	28	98	3 Jr	27	81	5 F	26	34	6 Mr	27	87											
2 S	21	05		3 O	20	58		5 N	19	11		6 D	18	64	99	1 Jr	17	17	2 F	15	71	4 Mr	17	24											
7 O	9	95		2 N	8	48		4 D	8	01	20	5 Jr	6	54	00	7 F	5	07	1 Mr	5	60	3 Ap	4	13											

TABLE X—A.

Distance of Sun from the Moon's Node at the Commencement of each Solar Year.

FOR ODD YEARS.										INCREASE FOR ODD YEARS.									
Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.	Yr. Increase.
days.	days.	days.	days.	days.	days.	days.	days.	days.	days.	days.	days.	days.	days.	days.	days.	days.	days.	days.	days.
11 31.66	21 44.69	31 57.72	41 70.75	51 83.78	61 96.81	71 109.84	81 122.86	91 135.89											
12 50.30	22 63.33	32 76.35	42 89.38	52 102.41	62 115.44	72 128.47	82 141.50	92 154.53											
13 68.93	23 81.96	33 94.99	43 108.01	53 121.05	63 134.07	73 147.10	83 160.13	93 173.16											
14 87.56	24 100.59	34 113.62	44 126.65	54 139.68	64 152.71	74 165.74	84 178.77	94 191.80											
15 106.20	25 119.23	35 132.66	45 145.29	55 158.31	65 171.34	75 184.37	85 197.40	95 210.43											
16 124.83	26 137.86	36 150.89	46 163.92	56 176.95	66 189.98	76 203.01	86 216.04	96 229.07											
17 143.47	27 156.50	37 169.52	47 182.55	57 195.58	67 208.61	77 221.64	87 234.67	97 247.70											
18 162.10	28 175.13	38 188.15	48 201.18	58 213.21	68 226.24	78 239.27	88 252.30	98 265.33											
19 180.74	29 193.77	39 206.79	49 219.82	59 226.85	69 239.88	79 252.91	89 265.94	99 278.97											
20 26.06	30 39.09	40 52.11	50 65.14	60 78.17	70 91.20	80 104.23	90 117.26												

The Canons of Eclipses.

A Lunar Eclipse is certain if ☉ from Node is between 0 and 10.052 or between 163.260 and 173.312 days.
" " doubtful " " " 10.225 " 13.345 " 163.087 " 159.967 "
" " impossible " " " 13.518 " 159.794 days.

TABLE XI.— LONGEST INTERVAL IN DAYS FROM NEW-MOON TO ENDING MOMENT

[The largest correction is—2·20890 for Nakshatras]

NAKSHATRAS.

Names of Nakshatras.	Order	I Ordinarily Vaisakha	Order	II Ordinarily Jyeshtha	Order	III Ordinarily Ashada	Order	IV Ordinarily Shravana	Order	V Ordinarily Bhadrapada	Order	VI Ordinarily Asvina	Order	VII Ordinarily Kartika	Order	VIII Ordinarily Margashira
Revati	27 0·1624	3 0·9892	5 0·8041	7 0·6190	9 0·4339	11 0·2489	13 0·0638	16 0·906							
Asvini	1 1·1743	4 2·0011	6 1·8160	8 1·6309	10 1·4459	12 1·2608	14 1·0757	17 1·902							
Bharani	2 2·1862	5 3·0130	7 2·8279	9 2·6428	11 2·4578	13 2·2727	15 2·0876	18 2·914							
Krittika	3 3·1981	6 4·0249	8 3·8398	10 3·6548	12 3·4697	14 3·2846	16 3·0995	19 3·926							
Rohini	4 4·2100	7 5·0368	9 4·8518	11 4·6667	13 4·4816	15 4·2965	17 4·1114	20 4·9383							
Mrigasira	5 5·2219	8 6·0488	10 5·8637	12 5·6786	14 5·4935	16 5·3084	18 5·1233	21 5·9502							
Ardhra	6 6·2338	9 7·0607	11 6·8756	13 6·6905	15 6·5054	17 6·3203	19 6·1353	22 6·9621							
Punarvasu	7 7·2458	10 8·0726	12 7·8875	14 7·7024	16 7·5173	18 7·3323	20 7·1472	23 7·9740							
Pushya	8 8·2577	11 9·0845	13 8·8994	15 8·7143	17 8·5292	19 8·3442	21 8·1591	24 8·9859							
Aslesha	9 9·2696	12 10·0964	14 9·9113	16 9·7262	18 9·5412	20 9·3561	22 9·1710	25 9·9978							
Magha	10 10·2815	13 11·1083	15 10·9232	17 10·7382	19 10·5531	21 10·3680	23 10·1829	26 11·0097							
Purna Phalguni	11 11·2934	14 12·1202	16 11·9352	18 11·7501	20 11·5650	22 11·3799	24 11·1948	27 12·0217							
Uttara Phalguni	12 12·3053	15 13·1322	17 12·9471	19 12·7620	21 12·5769	23 12·3918	25 12·2067	1 13·0336							
Hasta	13 13·3172	16 14·1441	18 13·9590	20 13·7739	22 13·5888	24 13·4037	26 13·2187	2 14·0455							
Chittira	14 14·3292	17 15·1567	19 14·9709	21 14·7858	23 14·6007	25 14·4156	27 14·2306	3 15·0574							
Svati	15 15·3411	18 16·1679	20 15·9828	22 15·7977	24 15·6126	26 15·4276	1 15·2425	4 16·0693							
Visakha	16 16·3530	19 17·1798	21 16·9947	23 16·8096	25 16·6246	27 16·4395	2 16·2544	5 17·0812							
Anuradha	17 17·3649	20 18·1917	22 18·0066	24 17·8216	26 17·6365	1 17·4514	3 17·2663	6 18·0931							
Jyeshtha	18 18·3768	21 19·2036	23 19·0186	25 18·8335	27 18·6484	2 18·4633	4 18·2782	7 19·1051							
Mula	19 19·3887	22 20·2156	24 20·0305	26 19·8454	1 19·6603	3 19·4752	5 19·2901	8 20·1170							
Purva Ashada	20 20·4006	23 21·2275	25 21·0424	27 20·8573	2 20·6722	4 20·4871	6 20·3020	9 21·1289							
Uttara Ashada	21 21·4126	24 22·2394	26 22·0543	1 21·8692	3 21·6841	5 21·4990	7 21·3140	10 22·1408							
Shravana	22 22·4245	25 23·2513	27 23·0662	2 22·8811	4 22·6960	6 22·5110	8 22·3259	11 23·1527							
Shravishta or Danishta	23 23·4364	26 24·2632	1 24·0781	3 23·8930	5 23·7080	7 23·5229	9 23·3378	12 24·1646							
Satabhisaj or Sataraka	24 24·4483	27 25·2751	2 25·0900	4 24·9050	6 24·7199	8 24·5348	10 24·3497	13 25·1765							
Purva Bhadrapada	25 25·4602	1 26·2870	3 26·1020	5 25·9169	7 25·7318	9 25·5467	11 25·3616	14 26·1884							
Uttara Bhadrapada	26 26·4721	2 27·2990	4 27·1139	6 26·9288	8 26·7437	10 26·5586	12 26·3735	15 27·2004							
Revati	27 27·4840	3 28·3109	5 28·1258	7 27·9407	9 27·7556	11 27·5705	13 27·3854	16 28·2123							
	...	1 28·4960	4 29·3228	6 29·1377	8 28·9526	10 28·7675	12 28·5824	14 28·3974	17 29·2242							
	...	2 29·5079						15 29·4093								

Names of Yogas.

YOGAS.

Vaidhriti ...	...	27 0·3021	5 0·8992	9 0·5548	13 0·2104	18 0·8075	22 0·4631	26 0·1187	4 0·7157
Vishkamba ...	...	1 1·2436	6 1·8407	10 1·4963	14 1·1519	19 1·7490	23 1·4046	27 1·0601	5 1·6572
Priti ...	...	2 2·1851	7 2·7822	11 2·4378	15 2·0934	20 2·6905	24 2·3460	1 2·0016	6 2·5987
Ayushmat ...	...	3 3·1266	8 3·7237	12 3·3793	16 3·0349	21 3·6319	25 3·2875	2 2·9431	7 3·5402
Saubhagya ...	...	4 4·0681	9 4·6652	13 4·3208	17 3·9764	22 4·5734	26 4·2290	3 3·8846	8 4·4817
Sobhana ...	...	5 5·0096	10 5·6067	14 5·2623	18 4·9178	23 5·5149	27 5·1705	4 4·8261	9 5·4232
Atiganda ...	...	6 5·9511	11 6·5482	15 6·2037	19 5·8593	24 6·4564	1 6·1120	5 5·7676	10 6·3647
Sukarman ...	...	7 6·8926	12 7·4896	16 7·1452	20 6·8008	25 7·3979	2 7·0535	6 6·7091	11 7·3062
Dhriti ...	...	8 7·8341	13 8·4311	17 8·0867	21 7·7423	26 8·3394	3 7·9950	7 7·6506	12 8·2477
Sula ...	...	9 8·7755	14 9·3726	18 9·0282	22 8·6838	27 9·2809	4 8·9365	8 8·5921	13 9·1891
Ganda ...	...	10 9·7170	15 10·3141	19 9·9697	23 9·6253	1 10·2224	5 9·8780	9 9·5335	14 10·1306
Vridhi ...	...	11 10·6585	16 11·2556	20 10·9112	24 10·5668	2 11·1639	6 10·8194	10 10·4750	15 11·0721
Dhruva ...	...	12 11·6000	17 12·1971	21 11·8527	25 11·5083	3 12·1053	7 11·7609	11 11·4165	16 12·0136
Vyaghata ...	...	13 12·5415	18 13·1386	22 12·7942	26 12·4498	4 13·0468	8 12·7024	12 12·3580	17 12·9551
Harshana ...	...	14 13·4830	19 14·0800	23 13·7357	27 13·3912	5 13·9813	9 13·6439	13 13·2995	18 13·8966
Vajra ...	...	15 14·4245	20 15·0216	24 14·6771	1 14·3327	6 14·9298	10 14·5854	14 14·2410	19 14·8381
Siddhi ...	...	16 15·3660	21 15·9630	25 15·6186	2 15·2742	7 15·8713	11 15·5269	15 15·1825	20 15·7796
Vyatipata ...	...	17 16·3075	22 16·9045	26 16·5601	3 16·2157	8 16·8128	12 16·4684	16 16·1240	21 16·7211
Variyas ...	...	18 17·2489	23 17·8460	27 17·5016	4 17·1572	9 17·7543	13 17·4099	17 17·0655	22 17·6625
Parigha ...	...	19 18·1904	24 18·7875	1 18·4431	5 18·0987	10 18·6958	14 18·3514	18 18·0070	23 18·6040
Siva ...	...	20 19·1319	25 19·7290	2 19·3846	6 19·0402	11 19·6373	15 19·2929	19 18·9484	24 19·5455
Siddha ...	...	21 20·0734	26 20·6705	3 20·3261	7 19·9817	12 20·5788	16 20·2343	20 19·8899	25 20·4870
Sadhya ...	...	22 21·0149	27 21·6120	4 21·2676	8 20·9232	13 21·5202	17 21·1758	21 20·8314	26 21·4285
Subha ...	...	23 21·9564	1 22·5535	5 22·2091	9 21·8647	14 22·4617	18 22·1173	22 21·7729	27 22·3700
Sukla ...	...	24 22·8979	2 23·4950	6 23·1506	10 22·8061	15 23·4032	19 23·0588	23 22·7144	1 23·3115
Brahman ...	...	25 23·8394	3 24·4665	7 24·0920	11 23·7476	16 24·3447	20 24·0003	24 23·6559	2 24·2530
Indra ...	...	26 24·7809	4 25·3780	8 25·0335	12 24·6891	17 25·2862	21 24·9418	25 24·5974	3 25·1945
Vaidhriti ...	...	27 25·7224	5 26·3194	9 25·8750	13 25·6306	18 26·2277	22 25·8833	26 25·5389	4 26·1360
	...	1 26·6638	6 27·2609	10 26·9165	14 26·5721	19 27·1692	23 26·8248	27 26·4804	5 27·0774
	...	2 27·6053	7 28·2024	11 27·8580	15 27·5136	20 28·1107	24 27·7663	1 27·4219	6 28·0189
	...	3 28·5468	8 29·1439	12 28·7995	16 28·4551	21 29·0522	25 28·7078	2 28·3633	7 28·9604
	...	4 29·4883			17 29·3966			3 29·3048	

OF EACH NAKSHATRA AND YOGA and—4·11036 for Yogas.]

NAKSHATRAS.

Order	IX Ordinarily Pausha	Order	X Ordinarily Magha	Order	XI Ordinarily Phalgun	Order	XII Ordinarily Chaitra when no Adhika Masa	Order	XIII Chaitra when there is Adhika Masa
18	0·7055	20	0·5204	22	0·3353	24	0·1503	27	0·9771
19	1·7174	21	1·5323	23	1·3473	25	1·1622	1	1·9890
20	2·7293	22	2·5443	24	2·3592	26	2·1741	2	3·0009
21	3·7413	23	3·5562	25	3·3711	27	3·1860	3	4·0128
22	4·7532	24	4·5682	26	4·3830	1	4·1979	4	5·0247
23	5·7651	25	5·5800	27	5·3949	2	5·2098	5	6·0367
24	6·7770	26	6·5919	1	6·4068	3	6·2217	6	7·0486
25	7·7889	27	7·6038	2	7·4187	4	7·2337	7	8·0605
26	8·8008	1	8·6157	3	8·4307	5	8·2456	8	9·0724
27	9·8127	2	9·6277	4	9·4426	6	9·2575	9	10·0843
1	10·8247	3	10·6396	5	10·4545	7	10·2694	10	11·0962
2	11·8366	4	11·6515	6	11·4664	8	11·2813	11	12·1081
3	12·8485	5	12·6634	7	12·4783	9	12·2932	12	13·1201
4	13·8604	6	13·6753	8	13·4902	10	13·3051	13	14·1320
5	14·8723	7	14·6872	9	14·5021	11	14·3171	14	15·1439
6	15·8842	8	15·6991	10	15·5141	12	15·3290	15	16·1558
7	16·8961	9	16·7111	11	16·5260	13	16·3409	16	17·1677
8	17·9081	10	17·7230	12	17·5379	14	17·3528	17	18·1796
9	18·9200	11	18·7349	13	18·5498	15	18·3647	18	19·1915
10	19·9319	12	19·7468	14	19·5617	16	19·3766	19	20·2035
11	20·9438	13	20·7587	15	20·5736	17	20·3885	20	21·2154
12	21·9557	14	21·7706	16	21·5855	18	21·4005	21	22·2273
13	22·9676	15	22·7825	17	22·5975	19	22·4124	22	23·2392
14	23·9795	16	23·7945	18	23·6094	20	23·4243	23	24·2511
15	24·9915	17	24·8064	19	24·6213	21	24·4362	24	25·2630
16	26·0034	18	25·8183	20	25·6332	22	25·4481	25	26·2749
17	27·0153	19	26·8302	21	26·6451	23	26·4600	26	27·2869
18	28·0272	20	27·8421	22	27·6570	24	27·4719	27	28·2988
19	29·0391	21	28·8540	23	28·6689	25	28·4839	1	29·3107
				26	29·4958				

YOGAS.

8	0·3713	12	0·0269	17	0·6240	21	0·2796	26	0·8767
9	1·3128	13	0·9684	18	1·5655	22	1·2211	27	1·8182
10	2·2543	14	1·9099	19	2·5070	23	2·1626	1	2·7596
11	3·1958	15	2·8514	20	3·4485	24	3·1041	2	3·7011
12	4·1373	16	3·7929	21	4·3900	25	4·0455	3	4·6426
13	5·0788	17	4·7344	22	5·3314	26	4·9870	4	5·5841
14	6·0203	18	5·6759	23	6·2729	27	5·9285	5	6·5256
15	6·9618	19	6·6173	24	7·2144	1	6·8700	6	7·4671
16	7·9032	20	7·5588	25	8·1559	2	7·8115	7	8·4086
17	8·8447	21	8·5003	26	9·0974	3	8·7530	8	9·3501
18	9·7862	22	9·4418	27	10·0389	4	9·6945	9	10·2916
19	10·7277	23	10·3833	1	10·9804	5	10·6360	10	11·2330
20	11·6692	24	11·3248	2	11·9219	6	11·5775	11	12·1745
21	12·6107	25	12·2663	3	12·8634	7	12·5189	12	13·1160
22	13·5522	26	13·2078	4	13·8048	8	13·4604	13	14·0575
23	14·4937	27	14·1493	5	14·7463	9	14·4019	14	14·9990
24	15·4352	1	15·0907	6	15·6878	10	15·3434	15	15·9405
25	16·3766	2	16·0322	7	16·6293	11	16·2849	16	16·8820
26	17·3181	3	16·9737	8	17·5708	12	17·2264	17	17·8235
27	18·2596	4	17·9152	9	18·5123	13	18·1679	18	18·7650
1	19·2011	5	18·8567	10	19·4538	14	19·1094	19	19·7065
2	20·1426	6	19·7982	11	20·3953	15	20·0509	20	20·6479
3	21·0841	7	20·7397	12	21·3368	16	20·9924	21	21·5894
4	22·0256	8	21·6812	13	22·2783	17	21·9338	22	22·5309
5	22·9671	9	22·6227	14	23·2197	18	22·8753	23	23·4724
6	23·9086	10	23·5646	15	24·1612	19	23·8168	24	24·4139
7	24·8501	11	24·5056	16	25·1027	20	24·7583	25	25·3554
8	25·7915	12	25·4471	17	26·0442	21	25·6999	26	26·2969
9	26·7330	13	26·3886	18	26·9857	22	26·6413	27	27·2384
10	27·6745	14	27·3301	19	27·9272	23	27·5828	1	28·1799
11	28·6160	15	28·2716	20	28·8687	24	28·5243	2	29·1214
		16	29·2131	25	29·4658				

ANNUAL CORRECTION

Argument:—Date of appearance of 1st New-Moon in each Solar Year according to Table X.

NAKSHATRAS.

Arg.	Corrn.	Arg.	Corrn.	Arg.	Corrn.	Arg.	Corrn.	Arg.	Corrn.
1	·07480	·01	·00075	·30	·02244	·59	·04413	·88	·06582
2	·14960	·02	·00150	·31	·02319	·60	·04488	·89	·06657
3	·22440	·03	·00224	·32	·02394	·61	·04563	·90	·06732
4	·29920	·04	·00299	·33	·02468	·62	·04638	·91	·06807
5	·37400	·05	·00374	·34	·02543	·63	·04712	·92	·06882
6	·44880	·06	·00449	·35	·02618	·64	·04787	·93	·06956
7	·52361	·07	·00524	·36	·02693	·65	·04862	·94	·07031
8	·59841	·08	·00598	·37	·02768	·66	·04937	·95	·07106
9	·67321	·09	·00673	·38	·02842	·67	·05012	·96	·07181
10	·74801	·10	·00748	·39	·02917	·68	·05086	·97	·07256
11	·82281	·11	·00823	·40	·02992	·69	·05161	·98	·07330
12	·89761	·12	·00898	·41	·03067	·70	·05236	·99	·07405
13	·97241	·13	·00972	·42	·03142	·71	·05311		
14	1·04721	·14	·01047	·43	·03216	·72	·05386		
15	1·12201	·15	·01122	·44	·03291	·73	·05460		
16	1·19681	·16	·01197	·45	·03366	·74	·05535		
17	1·27161	·17	·01272	·46	·03441	·75	·05610		
18	1·34641	·18	·01346	·47	·03516	·76	·05685		
19	1·42121	·19	·01421	·48	·03590	·77	·05760		
20	1·49602	·20	·01496	·49	·03665	·78	·05834		
21	1·57082	·21	·01571	·50	·03740	·79	·05909		
22	1·64562	·22	·01646	·51	·03815	·80	·05984		
23	1·72042	·23	·01720	·52	·03890	·81	·06059		
24	1·79522	·24	·01795	·53	·03964	·82	·06134		
25	1·87002	·25	·01870	·54	·04039	·83	·06208		
26	1·94482	·26	·01945	·55	·04114	·84	·06283		
27	2·01962	·27	·02020	·56	·04189	·85	·06358		
28	2·09442	·28	·02094	·57	·04264	·86	·06433		
29	2·16922	·29	·02169	·58	·04338	·87	·06508		

YOGAS.

1	0·13919	·01	·00139	·30	·04176	·59	·08212	·88	·12249
2	0·27838	·02	·00278	·31	·04315	·60	·08351	·89	·12388
3	0·41757	·03	·00417	·32	·04454	·61	·08491	·90	·12527
4	0·55676	·04	·00557	·33	·04593	·62	·08630	·91	·12666
5	0·69595	·05	·00696	·34	·04732	·63	·08769	·92	·12805
6	0·83514	·06	·00835	·35	·04872	·64	·08908	·93	·12945
7	0·97433	·07	·00974	·36	·05011	·65	·09047	·94	·13084
8	1·11352	·08	·01113	·37	·05150	·66	·09186	·95	·13223
9	1·25271	·09	·01253	·38	·05289	·67	·09326	·96	·13362
10	1·39190	·10	·01392	·39	·05428	·68	·09465	·97	·13601
11	1·53109	·11	·01530	·40	·05568	·69	·09604	·98	·13641
12	1·67028	·12	·01670	·41	·05707	·70	·09743	·99	·13780
13	1·80947	·13	·01809	·42	·05846	·71	·09882		
14	1·94866	·14	·01949	·43	·05985	·72	·10022		
15	2·08785	·15	·02088	·44	·06124	·73	·10161		
16	2·22704	·16	·02227	·45	·06263	·74	·10300		
17	2·36623	·17	·02366	·46	·06403	·75	·10439		
18	2·50542	·18	·02505	·47	·06542	·76	·10578		
19	2·64461	·19	·02645	·48	·06681	·77	·10718		
20	2·78380	·20	·02784	·49	·06820	·78	·10851		
21	2·92299	·21	·02923	·50	·06959	·79	·10996		
22	3·06218	·22	·03063	·51	·07098	·80	·11135		
23	3·20137	·23	·03201	·52	·07238	·81	·11274		
24	3·34056	·24	·03340	·53	·07377	·82	·11413		
25	3·47975	·25	·03480	·54	·07516	·83	·11553		
26	3·61894	·26	·03619	·55	·07655	·84	·11692		
27	3·75813	·27	·03758	·56	·07795	·85	·11831		
28	3·89732	·28	·03897	·57	·07934	·86	·11970		
29	4·03651	·29	·04036	·58	·08073	·87	·12109		

TABLE XI—A. LONGEST INTERVAL IN DAYS, GHATIKAS AND PALAS

The largest correction for

Names of Nakshatras.				NAKSHATRAS.											
				Order	Ordinarily	Order	Ordinarily	Order	Ordinarily	Order	Ordinarily	Order	Ordinarily		
					Vaisakha		Jyeshtha		Ashada		Shravana		Bhadrapada		
				I	II	III	IV	V							
				d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.	d. g. p.						
Revati	...	...	...	27	0 9 45	3	0 59 21	5	0 48 15	7	0 37 8	9	0 26 2
Asvini	...	...	...	1	1 10 28	4	2 0 4	6	1 48 58	8	1 37 51	10	1 26 45
Bharani	...	...	...	2	2 11 10	5	3 0 47	7	2 49 41	9	2 38 34	11	2 27 28
Krittika (Tamil Kiruttigai)	...	...	...	3	3 11 53	6	4 1 30	8	3 50 23	10	3 39 17	12	3 28 11
Rohini	...	...	...	4	4 12 36	7	5 2 13	9	4 51 7	11	4 40 0	13	4 28 54
Mirgasira (Tamil Mirugasiram)	...	...	...	5	5 13 19	8	6 2 56	10	5 51 49	12	5 49 43	14	5 29 37
Ardhra (Tamil arudra or Tiruvāḷirai)	...	...	...	6	6 14 2	9	7 3 39	11	6 52 32	13	6 41 26	15	6 30 20
Punarvasu	...	...	...	7	7 14 45	10	8 4 21	12	7 53 15	14	7 42 9	16	7 31 2
Pushya (Tamil Pusam)	...	...	...	8	8 15 28	11	9 5 4	13	8 53 58	15	8 42 52	17	8 31 45
Aslesha (Tamil Ayilyam)	...	...	...	9	9 16 11	12	10 5 47	14	9 54 41	16	9 43 34	18	9 32 28
Magha (Tamil Magham)	...	...	...	10	10 16 53	13	11 6 30	15	10 55 24	17	10 44 18	19	10 33 11
Purva Phalguni (Tamil Puram)	...	...	...	11	11 17 36	14	12 7 13	16	11 56 7	18	11 45 0	20	11 33 54
Uttara Phalguni (Tamil Uttiram)	...	...	...	12	12 18 19	15	13 7 56	17	12 56 50	19	12 45 43	21	12 34 37
Hasta (Tamil Hastam)	...	...	...	13	13 19 2	16	14 8 39	18	13 57 32	20	13 46 26	22	13 35 20
Chitra (Tamil Chittirai)	...	...	...	14	14 19 45	17	15 9 24	19	14 58 15	21	14 47 9	23	14 36 3
Svati	...	...	...	15	15 20 28	18	16 10 5	20	15 58 58	22	15 47 52	24	15 36 45
Visakha (Tamil Visakam)	...	...	...	16	16 21 11	19	17 10 47	21	16 59 41	23	16 48 35	25	16 37 20
Anuradha (Tamil Anusham)	...	...	...	17	17 21 54	20	18 11 30	22	18 0 24	24	17 49 18	26	17 38 11
Jyeshtha (Tamil Kettai)	...	...	...	18	18 22 37	21	19 12 13	23	19 1 7	25	18 50 1	27	18 38 54
Mula (Tamil Mulam)	...	...	...	19	19 23 19	22	20 12 56	24	20 1 50	26	19 50 44	1	19 39 37
Purva Ashada (Tamil Puradam)	...	...	...	20	20 24 2	23	21 13 39	25	21 2 33	27	20 51 26	2	20 40 20
Uttara Ashada (Tamil Uttiradam)	...	...	...	21	21 24 45	24	22 14 22	26	22 3 16	1	21 52 9	3	21 41 3
Shravana (Tamil Tiruvonam)	...	...	...	22	22 25 28	25	23 15 5	27	23 3 58	2	22 52 52	4	22 41 46
Shravishta or Danishta (Tamil Avittam)	...	...	...	23	23 26 11	26	24 15 48	1	24 4 41	3	23 53 35	5	23 42 29
Satabhisaj or Sataraka (Tamil Sadayam)	...	...	...	24	24 26 54	27	25 16 30	2	25 5 24	4	24 54 18	6	24 43 2
Purva Bhadrapada (Tamil Purattadi)	...	...	...	25	25 27 37	1	26 17 13	3	26 6 7	5	25 55 1	7	25 43 55
Uttara Bhadrapada (Tamil Uttirattadi)	...	...	...	26	26 28 20	2	27 17 56	4	27 6 50	6	26 55 44	8	26 44 37
Revati	...	...	...	27	27 29 2	3	28 18 39	5	28 7 33	7	27 56 27	9	27 45 20
				1	28 29 46	4	29 19 22	6	29 8 16	8	28 57 9	10	28 46 3		
				2	29 30 29										
Names of Yogas.				YOGAS.											
				Order	Ordinarily	Order	Ordinarily	Order	Ordinarily	Order	Ordinarily	Order	Ordinarily		
Vaidhriti	...	...	...	27	0 18 8	5	0 53 57	9	0 33 17	13	0 12 38	18	0 48 27
Vishkamba	...	...	...	1	1 14 37	6	1 50 27	10	1 29 47	14	1 9 7	19	1 44 56
Priti	...	...	...	2	2 11 6	7	2 46 56	11	2 26 16	15	2 5 36	20	2 41 26
Ayushmat	...	...	...	3	3 7 36	8	3 43 25	12	3 22 46	16	3 2 6	21	3 37 55
Saubhagya	...	...	...	4	4 4 5	9	4 39 55	13	4 19 15	17	3 58 35	22	4 34 24
Sobhana	...	...	...	5	5 0 35	10	5 36 24	14	5 15 44	18	4 55 4	23	5 30 54
Atiganda	...	...	...	6	5 57 4	11	6 32 54	15	6 12 13	19	5 51 34	24	6 27 23
Sukarman	...	...	...	7	6 53 33	12	7 29 23	16	7 8 43	20	6 48 3	25	7 23 53
Dhriti	...	...	...	8	7 50 3	13	8 25 52	17	8 5 12	21	7 44 32	26	8 20 22
Sula	...	...	...	9	8 46 32	14	9 22 21	18	9 1 42	22	8 41 2	27	9 16 51
Ganda	...	...	...	10	9 43 1	15	10 18 51	19	9 58 11	23	9 37 31	1	10 13 21
Vridhhi	...	...	...	11	10 39 31	16	11 15 20	20	10 54 40	24	10 34 1	2	11 9 50
Dhruva	...	...	...	12	11 36 0	17	12 11 50	21	11 51 10	25	11 30 30	3	12 6 19
Vyaghata	...	...	...	13	12 32 29	18	13 8 19	22	12 47 39	26	12 26 59	4	13 2 49
Harshana	...	...	...	14	13 28 59	19	14 4 48	23	13 41 9	27	13 23 28	5	13 58 53
Vajra	...	...	...	15	14 25 28	20	15 1 18	24	14 40 38	1	14 19 58	6	14 55 47
Siddhi	...	...	...	16	15 21 58	21	15 57 47	25	15 37 7	2	15 16 27	7	15 52 17
Vyatipata	...	...	...	17	16 18 27	22	16 54 16	26	16 33 36	3	16 12 57	8	16 48 46
Variyas	...	...	...	18	17 14 56	23	17 50 46	27	17 30 6	4	17 9 26	9	17 45 16
Parigha	...	...	...	19	18 11 26	24	18 47 15	1	18 26 35	5	18 5 55	10	18 41 45
Siva	...	...	...	20	19 7 55	25	19 43 44	2	19 23 5	6	19 2 25	11	19 38 14
Siddha	...	...	...	21	20 4 24	26	20 40 14	3	20 19 34	7	19 58 54	12	20 34 44
Sadhya	...	...	...	22	21 0 54	27	21 36 43	4	21 16 3	8	20 55 24	13	21 31 13
Subha	...	...	...	23	21 57 23	1	22 33 13	5	22 12 33	9	21 51 53	14	22 27 42
Sukla	...	...	...	24	22 53 53	2	23 29 42	6	23 9 2	10	22 48 22	15	23 21 12
Brahman	...	...	...	25	23 50 22	3	24 27 59	7	24 5 31	11	23 44 51	16	24 20 41
Indra	...	...	...	26	24 46 51	4	25 22 41	8	25 2 1	12	24 41 21	17	25 17 10
Vaidhriti	...	...	...	27	25 43 21	5	26 19 10	9	25 58 30	13	25 37 50	18	26 13 40
				1	26 39 50	6	27 15 39	10	26 54 59	14	26 31 20	19	27 10 9		
				2	27 36 19	7	28 12 9	11	27 51 29	15	27 30 49	20	28 6 39		
				3	28 32 49	8	29 8 38	12	28 47 58	16	28 27 18	21	29 3 8		
				4	29 29 18					17	29 23 48				

FROM NEW-MOON TO ENDING MOMENT OF EACH NAKSHATRA AND YOGA.

Nakshatras is—2d., 12gh., 32p. and—4d. 6gh., 38p. for yogas.

NAKSHATRAS.

Ordinarily	Order	Ordinarily	Order	Ordinarily	Order	Ordinarily	Order	Ordinarily	Order	Ordinarily	Order	Chaitra, when no Adhika Masam.	Order	Chaitra when there is Adhika Masam.
Asvina		Kartika		Margasira		Pausha		Magha		Phalguna		XII		XIII
VI		VII		VIII		IX		X		XI				
d. g. p.		d. g. p.		d. g. p.		d. g. p.		d. g. p.		d. g. p.		d. g. p.		d. g. p.
1 0 14 56	13	0 3 50	16	0 53 26	18	0 42 20	20	0 31 14	22	0 20 7	24	0 9 1	27	0 58 38
2 1 15 39	14	1 4 33	17	1 54 9	19	1 43 3	21	1 31 56	23	1 20 50	25	1 9 44	1	1 59 20
3 2 16 22	15	2 5 15	18	2 54 52	20	2 43 46	22	2 32 40	24	2 21 33	26	2 10 27	2	3 0 3
4 3 17 5	16	3 5 58	19	3 55 35	21	3 44 29	23	3 33 22	25	3 22 16	27	3 11 10	3	4 0 46
5 4 17 47	17	4 6 41	20	4 56 18	22	4 45 12	24	4 34 6	26	4 22 59	1	4 11 53	4	5 1 29
6 5 18 30	18	5 7 24	21	5 57 1	23	5 45 54	25	5 34 48	27	5 23 42	2	5 12 35	5	6 2 12
7 6 19 13	19	6 8 7	22	6 57 44	24	6 46 37	26	6 35 31	1	6 24 25	3	6 13 18	6	7 2 55
8 7 19 56	20	7 8 50	23	7 58 26	25	7 47 20	27	7 36 14	2	7 25 7	4	7 14 1	7	8 3 38
9 8 20 3	21	8 9 33	24	8 59 9	26	8 48 3	1	8 36 57	3	8 25 51	5	8 14 44	8	9 4 21
10 9 21 22	22	9 10 16	25	9 59 52	27	9 48 46	2	9 37 40	4	9 26 33	6	9 15 27	9	10 5 4
21 10 22 5	23	10 10 59	26	11 0 35	1	10 49 29	3	10 38 23	5	10 27 16	7	10 16 10	10	11 5 46
22 11 22 48	24	11 11 41	27	12 1 18	2	11 50 12	4	11 39 5	6	11 27 59	8	11 16 53	11	12 6 29
23 12 23 31	25	12 12 24	1	13 2 1	3	12 50 55	5	12 39 48	7	12 28 42	9	12 17 36	12	13 7 12
24 13 24 13	26	13 13 7	2	14 2 44	4	13 51 38	6	13 40 31	8	13 29 25	10	13 18 18	13	14 7 55
25 14 24 56	27	14 13 50	3	15 3 27	5	14 52 20	7	14 41 14	9	14 30 8	11	14 19 2	14	15 8 38
26 15 25 39	1	15 14 33	4	16 4 9	6	15 53 3	8	15 41 57	10	15 30 51	12	15 19 44	15	16 9 21
27 16 26 22	2	16 15 16	5	17 4 52	7	16 53 46	9	16 42 40	11	16 31 34	13	16 20 27	16	17 10 4
1 17 27 5	3	17 15 59	6	18 5 35	8	17 54 29	10	17 43 23	12	17 32 17	14	17 21 10	17	18 10 47
2 18 27 48	4	18 16 42	7	19 6 18	9	18 55 12	11	18 44 6	13	18 32 59	15	18 21 53	18	19 11 29
3 19 28 31	5	19 17 24	8	20 7 1	10	19 55 55	12	19 44 49	14	19 33 42	16	19 22 36	19	20 12 13
4 20 29 14	6	20 18 7	9	21 7 44	11	20 56 38	13	20 45 31	15	20 34 25	17	20 23 19	20	21 12 56
5 21 29 56	7	21 18 50	10	22 8 27	12	21 57 21	14	21 46 14	16	21 35 8	18	21 24 2	21	22 13 38
6 22 30 40	8	22 19 33	11	23 9 10	13	22 58 3	15	22 46 57	17	22 35 51	19	22 24 45	22	23 14 21
7 23 31 23	9	23 20 16	12	24 9 53	14	23 58 46	16	23 47 40	18	23 36 34	20	23 25 28	23	24 15 4
8 24 32 5	10	24 20 59	13	25 10 35	15	24 59 29	17	24 48 23	19	24 37 17	21	24 26 10	24	25 15 47
9 25 32 48	11	25 21 42	14	26 11 18	16	25 0 12	18	25 49 6	20	25 38 0	22	25 26 53	25	26 16 30
10 26 33 31	12	26 22 25	15	27 12 1	17	26 0 55	19	26 49 49	21	26 38 42	23	26 27 36	26	27 17 13
11 27 34 14	13	27 23 8	16	28 12 44	18	27 1 38	20	27 50 32	22	27 39 25	24	27 28 19	27	28 17 56
12 28 34 57	14	28 23 51	17	29 13 27	19	28 2 21	21	28 51 14	23	28 40 8	25	28 29 2	1	29 18 39
	15	29 24 34									26	29 29 45		

YOGAS.

22 0 27 47	26 0 7 7	4 0 42 57	8 0 22 17	12 0 1 37	17 0 37 26	21 0 16 47	26 0 52 36
23 1 24 17	27 1 3 36	5 1 39 26	9 1 18 46	13 0 58 6	18 1 33 56	22 1 13 16	27 1 49 6
24 2 20 46	1 2 0 6	6 2 35 55	10 2 15 16	14 1 54 36	19 2 30 25	23 2 9 45	1 2 45 35
25 3 17 15	2 2 56 35	7 3 32 25	11 3 11 45	15 2 51 5	20 3 26 55	24 3 6 15	2 3 42 4
26 4 13 44	3 3 53 5	8 4 28 54	12 4 8 14	16 3 47 35	21 4 23 24	25 4 2 44	3 4 38 33
27 5 10 14	4 4 49 34	9 5 25 24	13 5 4 44	17 4 44 4	22 5 19 53	26 4 59 13	4 5 35 3
1 6 6 43	5 5 46 3	10 6 21 53	14 6 1 13	18 5 40 33	23 6 16 23	27 5 55 43	5 6 31 32
2 7 3 13	6 6 42 33	11 7 18 22	15 6 57 43	19 6 37 2	24 7 12 52	1 6 52 12	6 7 28 2
3 7 59 42	7 7 39 2	12 8 14 52	16 7 54 12	20 7 33 32	25 8 9 21	2 7 48 41	7 8 24 31
4 8 56 11	8 8 35 32	13 9 11 21	17 8 50 41	21 8 30 1	26 9 5 51	3 8 45 11	8 9 21 0
5 9 52 41	9 9 32 1	14 10 7 50	18 9 47 10	22 9 26 31	27 10 2 20	4 9 41 40	9 10 17 30
6 10 49 10	10 10 28 30	15 11 4 20	19 10 43 40	23 10 23 0	1 10 58 50	5 10 38 10	10 11 13 23
7 11 45 39	11 11 24 59	16 12 0 49	20 11 40 9	24 11 19 29	2 11 55 19	6 11 34 39	11 12 10 28
8 12 42 9	12 12 21 29	17 12 57 18	21 12 36 39	25 12 15 59	3 12 51 48	7 12 31 8	12 13 6 58
9 13 38 38	13 13 17 58	18 13 53 48	22 13 33 8	26 13 12 28	4 13 48 17	8 13 27 38	13 14 3 27
10 14 35 8	14 14 14 28	19 14 50 17	23 14 29 37	27 14 8 58	5 14 44 47	9 14 24 7	14 14 59 56
11 15 31 37	15 15 10 57	20 15 46 47	24 15 26 7	1 15 5 27	6 15 41 16	10 15 20 36	15 15 56 26
12 16 28 6	16 16 7 26	21 16 43 16	25 16 22 36	2 16 1 56	7 16 37 46	11 16 17 6	16 16 52 55
13 17 24 36	17 17 3 56	22 17 39 45	26 17 19 5	3 16 58 25	8 17 34 15	12 17 13 35	17 17 49 25
14 18 21 5	18 18 0 25	23 18 36 14	27 18 15 35	4 17 54 55	9 18 30 44	13 18 10 5	18 18 45 54
15 19 17 35	19 18 56 54	24 19 32 44	1 19 12 4	5 18 51 24	10 19 27 14	14 19 6 34	19 19 42 23
16 20 13 28	20 19 53 24	25 20 29 13	2 20 8 23	6 19 47 54	11 20 23 43	15 20 3 3	20 20 38 53
17 21 10 33	21 20 49 53	26 21 25 43	3 21 5 3	7 20 44 23	12 21 20 13	16 20 59 33	21 21 35 22
18 22 7 2	22 21 46 23	27 22 22 12	4 22 1 32	8 21 40 52	13 22 16 42	17 21 56 2	22 22 31 51
19 23 3 32	23 22 42 52	1 23 18 41	5 22 58 2	9 22 37 22	14 23 13 11	18 22 52 31	23 23 28 21
20 24 0 1	24 23 39 21	2 24 15 11	6 23 54 31	10 23 33 53	15 24 9 40	19 23 19 1	24 24 24 50
21 24 56 31	25 24 35 51	3 25 11 40	7 24 51 0	11 24 39 20	16 25 6 10	20 24 45 30	25 25 21 20
22 25 53 0	26 25 32 20	4 26 8 10	8 25 47 29	12 25 26 50	17 26 2 39	21 25 42 0	26 26 17 49
23 26 49 29	27 26 28 50	5 27 4 39	9 26 43 59	13 26 23 19	18 26 59 9	22 26 38 29	27 27 14 18
24 27 45 59	1 27 25 19	6 28 1 8	10 27 40 28	14 27 19 48	19 27 55 38	23 27 34 58	1 28 10 48
25 28 42 28	2 28 21 48	7 28 57 38	11 28 36 58	15 28 16 18	20 28 52 7	24 28 31 28	2 29 7 17
	3 29 18 17			16 29 12 47		25 29 27 57	

TABLE XII.—EPHEMERIS FOR BENGAL.

Dates of Commencement of Bengal Solar Months, A. D. 1840 to A. D. 1920.

A.D.	Vaisakha (April)	Jyeshtha (May)	Ashadha (June)	Shravana (July)	Bhadrapada (August)	Asvina (September)	Kartika (October)	Margasira (November)	Pausa (December)	A.D.	Magha (January)	Phalgun (February)	Chaitra (March)	A.D.	Vaisakha (April)	Jyeshtha (May)	Ashadha (June)	Shravana (July)	Bhadrapada (August)	Asvina (September)	Kartika (October)	Margasira (November)	Pausa (December)	A.D.	Magha (January)	Phalgun (February)	Chaitra (March)
1840	12	13	13	15	15	15	16	15	14	41	13	11	13	1880	12	13	14	15	16	16	16	15	15	81	13	11	13
1841	12	13	14	15	16	16	16	15	14	42	13	11	13	1881	12	13	14	15	16	16	16	15	15	82	13	12	13
1842	12	13	14	15	16	16	16	15	15	43	13	11	13	1882	13	14	14	16	16	16	17	16	15	83	13	12	13
1843	13	14	14	16	16	16	17	15	15	44	13	12	13	1883	13	14	14	16	16	17	17	16	15	84	14	12	13
1844	12	13	13	15	15	15	16	15	14	45	13	11	13	1884	12	13	14	15	16	16	16	15	15	85	13	11	13
1845	12	13	14	15	16	16	16	15	15	46	13	11	13	1885	13	13	14	16	16	16	16	15	15	86	13	12	13
1846	12	13	14	15	16	16	16	15	15	47	13	12	13	1886	13	14	14	16	16	16	17	16	15	87	13	12	13
1847	13	14	14	16	16	16	17	16	15	48	13	12	13	1887	13	14	14	16	17	17	17	16	15	88	14	12	13
1848	12	13	13	15	15	15	16	15	14	49	13	11	13	1888	12	13	14	15	16	16	16	15	15	89	13	11	13
1849	12	13	14	15	16	16	16	15	15	50	13	11	13	1889	13	14	14	16	16	16	17	15	15	90	13	12	13
1850	12	13	14	15	16	16	16	15	15	51	13	12	13	1890	13	14	14	16	16	16	17	16	15	91	13	12	13
1851	13	14	14	16	16	16	17	16	15	52	13	12	13	1891	13	14	14	16	17	17	17	16	15	92	14	12	13
1852	12	13	13	15	15	15	16	15	14	53	13	11	13	1892	12	13	14	15	16	16	16	15	15	93	13	11	13
1853	12	13	14	15	16	16	16	15	15	54	13	11	13	1893	13	14	14	16	16	16	17	15	15	94	13	12	13
1854	13	13	14	16	16	16	16	15	15	55	13	12	13	1894	13	14	14	16	16	16	17	16	15	95	14	12	13
1855	13	14	14	16	16	16	17	16	15	56	13	12	13	1895	13	14	14	16	17	17	17	16	15	96	14	12	13
1856	12	13	13	15	16	16	16	15	14	57	13	11	13	1896	12	13	14	15	16	16	16	15	15	97	13	11	13
1857	12	13	14	15	16	16	16	15	15	58	13	11	13	1897	13	14	14	16	16	16	17	15	15	98	13	12	13
1858	13	13	14	16	16	16	16	15	15	59	13	12	13	1898	13	14	14	16	16	16	17	16	15	99	14	12	13
1859	13	14	14	16	16	16	17	16	15	60	13	12	13	1899	13	14	15	16	17	17	17	16	15	1900	14	12	13
1860	12	13	13	15	16	16	16	15	14	61	13	11	13	1900	13	14	15	16	17	17	17	16	16	01	14	12	13
1861	12	13	14	15	16	16	16	15	15	62	13	11	13	1901	14	15	15	17	17	17	18	17	16	02	14	13	13
1862	13	14	14	16	16	16	17	15	15	63	13	12	13	1902	14	15	15	17	17	17	18	17	16	03	15	13	13
1863	13	14	14	16	16	16	17	16	15	64	13	12	13	1903	14	15	16	17	18	18	18	17	17	04	15	13	13
1864	12	13	13	15	16	16	16	15	14	65	13	11	13	1904	13	14	15	16	17	17	17	16	16	05	14	13	13
1865	12	13	14	15	16	16	16	15	15	66	13	11	13	1905	14	15	15	17	17	17	18	17	16	06	14	13	13
1866	13	14	14	16	16	16	17	15	15	67	13	12	14	1906	14	15	15	17	17	17	18	17	16	07	15	13	13
1867	13	14	14	16	16	16	17	16	15	68	13	12	13	1907	14	15	16	17	18	18	18	17	17	08	15	13	13
1868	12	13	13	15	16	16	16	15	14	69	13	11	13	1908	13	14	15	16	17	17	17	16	16	09	14	13	13
1869	12	13	14	15	16	16	16	15	15	70	13	11	13	1909	14	15	15	17	17	17	18	17	16	10	14	13	13
1870	13	14	14	16	16	16	17	15	15	71	13	12	14	1910	14	15	15	17	17	17	18	17	16	11	15	13	13
1871	13	14	14	16	16	16	17	16	15	72	14	12	13	1911	14	15	16	17	18	18	18	17	17	12	15	13	13
1872	12	13	14	15	16	16	16	15	14	73	13	11	13	1912	14	14	15	17	17	17	17	16	16	13	14	13	13
1873	12	13	14	15	16	16	16	15	15	74	13	12	13	1913	14	15	15	17	17	17	18	17	16	14	14	13	13
1874	13	14	14	16	16	16	17	16	15	75	13	12	14	1914	14	15	15	17	18	18	18	17	16	15	15	13	13
1875	13	14	14	15	16	16	17	16	15	76	14	12	13	1915	14	15	16	17	18	18	18	17	17	16	15	13	13
1876	12	13	14	15	16	16	16	15	15	77	13	11	13	1916	14	14	15	17	17	17	17	16	16	17	14	13	13
1877	12	13	14	15	16	16	16	15	15	78	13	12	13	1917	14	15	15	17	17	17	18	17	16	18	14	13	13
1878	13	13	14	16	16	16	17	16	15	79	13	12	14	1918	14	15	15	17	18	18	18	17	16	19	15	13	13
1879	13	14	14	16	16	16	17	16	15	80	14	12	13	1919	14	15	16	17	18	18	18	17	17	20	15	13	13

NOTE.—It will be seen from a comparison of the above table with the General Ephemeris given below that solar months in Bengal seldom commence on the same day as in the Tamil and Malayalam countries. In the first place the Sankrantis which determine the commencement of solar months in Bengal are those fixed by the Surya Siddhanta, whereas in Southern India the solar months and their Sankrantis are reckoned according to the Arya Siddhanta.

Secondly, the rule in Bengal is that when the Sankranti occurs less than 45 ghatikas after sunrise, the civil solar month commences on the next day, and when the Sankranti occurs 45 ghatikas after sunrise or later, the civil solar month commences two days after the date of the Sankranti. It follows from this rule that in Bengal the civil month never begins on the date of the Sankranti which in that province invariably belongs to the previous month whereas in Southern India, the civil month very often begins on the day of the Sankranti. In practice, the rule in Bengal appears to be to begin the Solar month on the third day after Sankranti when the fraction of day at which Sankranti occurs is 70 of a day or more. The above table has been constructed on this principle.

TABLE XII.—General Ephemeris A.D. 1840—A.D. 1845.

		Tamil Month						New Moon															
		Beginning			End			of New Moon Tithi. ☾'s Anom. ☉'s Anom.															
		Week-day		Last Day	Week-day		Lunar month.	Mean		Actual								Deduct for Nakshatras	Deduct for Yogas.				
Commence- ment of years in dif- ferent eras.	Tamil month.	Month	Day		Month	Day		Month	Day (mean)	Ghatikas Palas	Day (actual)	Ghatikas Palas	Day	Ghatikas Palas	Day	Ghatikas Palas							
K. Y. 4941	Chittirai .	7 Ap	11	31	2 My	11	Vaisakha ...	6 My	1	37 56 ...	57 58	25 15 58	20 32 14	1 day, 32 ghat., 10 palas.									
Sak. 1762	Vaikasi ...	3 My	12	31	5 Je	11	Jyeshtha ...	1 My	31	9 46 ...	16 22	27 14 31	50 4 4										
Vik. 1897	Ani ...	6 Je	12	32	2 Jl	13	Ashada ...	2 Je	29	41 36 ...	33 14	1 39 48	79 35 54										
(S.) Sarvari	Adi ...	3 Jl	14	31	5 Au	13	Sravana ...	4 Jl	29	13 26 28○	51 20	3 38 22	109 7 44										
K. 1015 (S.M.)	Avani ...	6 Au	14	31	1 S	13	Bhadrpadā ...	5 Au	27	45 17 ...●	13 25	5 36 56	138 39 34										
K. 1015 (N.M.)	Purattasi .	2 S	14	31	4 O	14	Asvina ...	7 S	26	17 7 25	41 40	7 35 29	168 11 24										
59 g, 35 p.	Aippasi ...	5 O	15	30	6 N	13	Kartika ...	1 O	25	48 57 ...	17 28	9 34 2	197 43 15										
B. S. 1246	Kartigai .	7 N	14	29	7 D	12	Margasira ...	3 N	24	20 47 ...	0 50	11 32 36	227 15 5										
N.)Virodhakrit	Margali ...	1 D	13	30	2 Ja	11	Pausha ...	4 D	23	52 37 ...	49 40	13 31 10	256 46 55										
A.D. 1841	Tai ...	3 Ja	12	29	3 F	9	Magha ...	6 Ja	22	24 27 ...○	39 23	15 29 43	286 18 45	0 day, 43 ghat., 17 palas.									
H. 1257	Masi ...	4 F	10	30	5 Mr	11	Phalguna ...	7 F	20	56 17 21	24 55	17 28 17	315 50 35										
Feb. 22, 23	Panguni .	6 Mr	12	30	7 Ap	10	Chaitra ...	2 Mr	22	28 7 23	33 13	19 26 50	345 22 25										
K. Y. 4942	Chittirai .	1 Ap	11	31	3 My	11	Vaisakha ...	4 Ap	21	0 0 ...	3 48	21 25 24	9 38 45						2 days, 0 ghat., 57 palas.				
Sak. 1763	Vaikasi ...	4 My	12	32	7 Je	12	Jyeshtha ...	5 My	20	31 49 ...	58 37	23 23 58	39 10 34										
Vik. 1898	Ani ...	1 Je	13	31	3 Jl	13	Ashada ...	7 Je	19	3 39 ...	16 44	25 22 31	68 42 24										
(S.) Plava	Adi ...	4 Jl	14	32	7 Au	14	Sravana ...	1 Jl	18	35 28 ...○	33 33	27 21 5	98 14 14										
K. 1016 (S. M.)	Avani ...	1 Au	15	31	3 S	14	Bhadrpadā ...	3 Au	17	7 18 16	51 12	1 46 22	127 46 4										
K. 1016 (N.M.)	Purattasi .	4 S	15	30	5 O	14	Asvina ...	4 S	15	39 8 ...	11 43	3 44 55	157 17 54										
15 g, 6 p	Aippasi ...	6 O	15	30	7 N	13	Kartika ...	6 O	15	10 58 14	37 36	5 43 29	186 49 44										
B. S. 1247	Kartigai .	1 N	14	30	2 D	13	Margasira ...	7 N	13	42 48 ...	10 18	7 42 3	216 21 34										
N.)Paridhavin.	Margali ...	3 D	14	29	3 Jr	11	Pausha ...	2 D	13	14 38 12	50 13	9 40 36	245 53 25										
A.D. 1842	Tai ...	4 Ja	12	29	4 F	9	Magha ...	3 Ja	11	46 29 ...○	36 22	11 39 10	275 25 15	1 day, 18 ghat., 4 palas.									
H. 1258	Masi ...	5 F	10	30	6 Mr	11	Phalguna ...	5 F	10	18 19 ...	24 54	13 37 43	304 57 5										
Feb. 12	Panguni .	7 Mr	12	31	2 Ap	11	Chaitra ...	6 Mr	11	50 9 12	12 6	15 36 17	334 28 55										
K. Y. 4943	Chittirai .	3 Ap	12	30	4 My	11	Vaisakha ...	1 Ap	10	21 59 ...	53 11	17 34 51	364 0 45						2 days, 29 ghat., 11 palas.				
Sak. 1764	Vaikasi ...	5 My	12	32	1 Je	12	Jyeshtha ...	2 My	9	53 49 10	26 50	19 33 24	28 17 4										
Vik. 1899	Ani ...	2 Je	13	31	4 Jl	13	Ashada ...	4 Je	8	25 39 ...	53 33	21 31 58	57 48 54										
(S.) Subhakrit.	Adi ...	5 Jl	14	32	1 Au	14	Sravana ...	5 Jl	7	57 29 8●○	15 5	23 30 31	87 20 44										
K. 1017 (S.M.)	Avani ...	2 Au	15	31	4 S	14	Bhadrpadā ...	7 Au	6	29 19 ...	34 0	25 29 5	116 52 34										
K. 1017 (N.M.)	Purattasi .	5 S	15	30	6 O	14	Asvina ...	2 S	5	1 10 4	52 48	27 27 39	146 24 24										
30 g, 37 p.	Aippasi ...	7 O	15	30	1 N	13	Kartika ...	3 O	4	33 0 ...	13 36	1 52 56	175 56 14										
B. S. 1248	Kartigai .	2 N	14	30	3 D	13	Margasira ...	5 N	3	4 49 2	38 16	3 51 29	205 28 4										
(N.) Parmadin	Margali ...	4 D	14	29	4 Jr	11	Pausha ...	6 D	2	36 40 ...	8 13	5 50 3	234 59 55										
A.D. 1843	Tai ...	5 Ja	12	30	6 F	10	Magha ...	1 Ja	1	8 30 D.31	44 7	7 48 36	264 31 45	1 day, 18 ghat., 4 palas.									
H. 1259	Masi ...	7 F	11	29	7 Mr	11	Phalguna ...	2 Ja	30	40 20 ...	25 26	9 47 10	294 3 35										
Feb. 1	Panguni .	1 Mr	12	31	3 Ap	11	Chaitra ...	4 Mr	1	12 10 ...	10 15	11 45 44	323 35 25										
K. Y. 4944	Chittirai .	4 Ap	12	31	6 My	12	Vaisakha ...	5 Mr	30	44 0 ...	55 32	13 44 17	353 7 15						2 days, 0 ghat., 57 palas.				
Sak. 1765	Vaikasi ...	7 My	13	31	2 Je	12	Jyeshtha ...	2 My	9	53 49 10	26 50	19 33 24	28 17 4										
Vik. 1900	Ani ...	3 Je	13	32	6 Jl	14	Ashada ...	4 Je	8	25 39 ...	53 33	21 31 58	57 48 54										
(S.) Sobhakrit	Adi ...	7 Jl	15	31	2 Au	14	Sravana ...	5 Jl	7	57 29 8●○	15 5	23 30 31	87 20 44										
K. 1018 (S. M.)	Avani ...	3 Au	15	31	5 S	14	Bhadrpadā ...	7 Au	6	29 19 ...	34 0	25 29 5	116 52 34										
K. 1018 (N.M.)	Purattasi .	6 S	15	31	1 O	15	Asvina ...	2 S	5	1 10 4	52 48	27 27 39	146 24 24										
46 g, 9 p	Aippasi ...	2 O	16	30	3 N	14	Kartika ...	3 O	4	33 0 ...	13 36	1 52 56	175 56 14										
B. S. 1249	Kartigai .	4 N	15	29	4 D	13	Margasira ...	5 N	3	4 49 2	38 16	3 51 29	205 28 4										
(N.) Ananda	Margali ...	5 D	14	29	5 Jr	11	Pausha ...	6 D	2	36 40 ...	8 13	5 50 3	234 59 55										
A.D. 1844	Tai ...	6 Ja	12	30	7 F	10	Magha ...	1 Ja	1	8 30 D.31	44 7	7 48 36	264 31 45	1 day, 18 ghat., 4 palas.									
H. 1260	Masi ...	1 F	11	30	2 Mr	11	Phalguna ...	2 Ja	30	40 20 ...	25 26	9 47 10	294 3 35										
Ja. 22	Panguni .	3 Mr	12	30	4 Ap	10	Chaitra ...	4 Mr	1	12 10 ...	10 15	11 45 44	323 35 25										
K. Y. 4945	Chittirai .	5 Ap	11	31	7 My	11	Vaisakha ...	5 Mr	30	44 0 ...	55 32	13 44 17	353 7 15						2 days, 0 ghat., 57 palas.				
Sak. 1766	Vaikasi ...	1 My	12	31	3 Je	11	Jyeshtha ...	2 My	9	53 49 10	26 50	19 33 24	28 17 4										
Vik. 1901	Ani ...	4 Je	12	32	6 Jl	14	Ashada ...	4 Je	8	25 39 ...	53 33	21 31 58	57 48 54										
(S.) Krodhi	Adi ...	1 Jl	14	31	3 Au	13	Sravana ...	5 Jl	7	57 29 8●○	15 5	23 30 31	87 20 44										
K. 1019 (S. M.)	Avani ...	4 Au	14	31	6 S	13	Bhadrpadā ...	7 Au	6	29 19 ...	34 0	25 29 5	116 52 34										
K. 1019 (N.M.)	Purattasi .	7 S	14	31	2 O	14	Asvina ...	2 S	5	1 10 4	52 48	27 27 39	146 24 24										
1 g, 40 p.	Aippasi ...	3 O	15	30	4 N	13	Kartika ...	3 O	4	33 0 ...	13 36	1 52 56	175 56 14										
B. S. 1250	Kartigai .	5 N	14	29	5 D	12	Margasira ...	5 N	3	4 49 2	38 16	3 51 29	205 28 4										
(N.) Rakshasa	Margali ...	6 D	13	30	7 Jr	11	Pausha ...	6 D	2	36 40 ...	8 13	5 50 3	234 59 55										
A.D. 1845	Tai ...	1 Ja	12	29	1 F	9	Magha ...	1 Ja	1	8 30 D.31	44 7	7 48 36	264 31 45	1 day, 18 ghat., 4 palas.									
H. 1261 Ja. 10	Masi ...	2 F	10	30	3 Mr	11	Phalguna ...	2 Ja	30	40 20 ...	25 26	9 47 10	294 3 35										
H. 1262 Dec. 30	Panguni .	4 Mr	12	30	5 Ap	10	Chaitra ...	4 Mr	1	12 10 ...	10 15	11 45 44	323 35 25										

TABLE XII.—General Ephemeris A.D. 1845—A.D. 1850.

												New Moon											
												Ending moment		of New Moon Tithi		('s Anom. ☉'s Anom.							
												Mean	Actual										
Commence- ment of years in dif- ferent eras.	Tamil month.	Tamil Month			Tamil Month			Lunar month.	Tamil Month			Day (mean)	Ghatikas Palas	Day (actual)	Ghatikas Palas	Day	Ghatikas Palas	Day	Ghatikas Palas	Deduct for Nakshatras			
		Beginning	End		Beginning	End																	
		Week-day	Month	Day	Week-day	Month	Day	Week-day	Month	Day													
K. Y. 4946	Chittirai ...	6	Ap	11	31	1	My	11	Vaisakha ...	3	My	6	31 43 ...	●	21	4	10	0	18	25	8	24	
Sak. 1767	Vaikasi ...	2	My	12	32	5	Je	12	Jyeshtha ...	5	Je	5	3 33 4		57	41	11	58	51	54	40	14	
Vik. 1902	Ani ...	6	Je	13	31	1	Jl	13	Ashada ...	6	Jl	4	35 24 ...		35	46	13	57	25	84	12	4	
(S.) Visvavasu	Adi ...	2	Jl	14	32	5	Au	14	Sravana ...	1	Au	3	7 14 ...		13	37	15	55	59	113	43	54	
K. 1020 (S. M.)	Avani ...	6	Au	15	31	1	S	14	Bhadrupada ...	2	S	1	39 4 ...		49	14	17	54	32	143	15	44	
K. 1020 (N. M.)	Purattasi ...	2	S	15	30	3	O	14	Asvina ...	4	O	1	10 54 ...		24	49	19	53	6	172	47	34	
17 g, 11 p.	Aippasi ...	4	O	15	30	5	N	13	Kartika ...	5	O	30	42 44 ...	○	57	1	21	51	39	202	19	24	
B. S. 1251	Kartigai ...	6	N	14	30	7	D	13	Margasira ...	7	N	29	14 34 ...		26	58	23	50	13	231	51	14	
(N.) Anala	Margali ...	1	D	14	29	1	Ja	11	Pausha ...	1	D	28	46 24 ...		55	1	25	48	47	261	23	5	
A. D. 1846	Tai ...	2	Ja	12	29	2	F	9	Magha ...	3	Ja	27	18 14 ...		21	33	0	14	4	290	54	55	
H. 1263	Masi ...	3	F	10	30	4	Mr	11	Phalguna ...	4	F	25	50 5 ...		48	1	2	12	37	320	26	45	
Dec. 20	Panguni ...	5	Mr	12	31	7	Ap	11	Chaitra ...	6	Mr	27	21 55 ...		12	43	4	11	11	349	58	35	
K. Y. 4947	Chittirai ...	1	Ap	12	30	2	My	11	Vaisakha ...	7	Ap	25	53 45 ...		39	14	6	9	44	14	14	54	
Sak. 1768	Vaikasi ...	3	My	12	32	6	Je	12	Jyeshtha ...	2	My	25	25 35 ...		7	46	8	8	18	43	46	44	
Vik. 1903	Ani ...	7	Je	13	31	2	Jl	13	Ashada ...	3	Je	23	57 25 ...		39	19	10	6	52	73	18	34	
(S.) Parabhava.	Adi ...	3	Jl	14	32	6	Au	14	Sravana ...	5	Jl	23	29 15 ...		14	36	12	5	25	102	50	24	
K. 1021 (S. M.)	Avani ...	7	Au	15	31	2	S	14	Bhadrupada ...	7	Au	22	1 6 21		53	39	14	3	59	132	22	14	
K. 1021 (N. M.)	Purattasi ...	3	S	15	30	4	O	14	Asvina ...	1	S	20	32 56 ...		34	48	16	2	32	161	54	4	
32 g, 42 p.	Aippasi ...	5	O	15	30	6	N	13	Kartika ...	3	O	20	4 46 ...	●	15	36	18	1	6	191	25	54	
B. S. 1252	Kartigai ...	7	N	14	30	1	D	13	Margasira ...	4	N	18	36 36 ...		54	17	19	59	40	220	57	44	
(N.) Pingala	Margali ...	2	D	14	29	2	Ja	11	Pausha ...	6	D	18	8 26 ...		29	14	21	58	13	250	29	34	
A. D. 1847	Tai ...	3	Ja	12	30	4	F	10	Magha ...	7	Ja	16	40 16 17		0	22	23	56	47	280	1	25	
H. 1264	Masi ...	5	F	11	29	5	Mr	11	Phalguna ...	2	F	15	12 6 ...		27	37	25	55	20	309	33	15	
Dec. 9	Panguni ...	6	Mr	12	31	1	Ap	11	Chaitra ...	3	Mr	16	43 56 ...	○	51	35	0	20	37	339	5	5	
K. Y. 4948	Chittirai ...	2	Ap	12	31	4	My	12	Vaisakha ...	5	Ap	15	15 46 ...	●	13	41	2	19	11	3	21	24	
Sak. 1769	Vaikasi ...	5	My	13	31	7	Je	12	Jyeshtha ...	6	My	14	47 36 ...		35	27	4	17	31	32	53	14	
Vik. 1904	Ani ...	1	Je	13	32	4	Jl	14	Ashada ...	1	Je	13	19 26 12		58	30	6	16	8	62	25	4	
(S.) Plavanga	Adi ...	5	Jl	15	31	7	Au	14	Sravana ...	2	Jl	12	51 17 ...		24	54	8	14	52	91	56	54	
K. 1022 (S. M.)	Avani ...	1	Au	15	31	3	S	14	Bhadrupada ...	4	Au	11	23 7 10		56	33	10	13	25	121	28	44	
K. 1022 (N. M.)	Purattasi ...	4	S	15	31	6	O	15	Asvina ...	5	S	9	54 57 ...	○	34	23	12	11	59	151	0	34	
48 g, 14 p.	Aippasi ...	7	O	16	30	1	N	14	Kartika ...	7	O	9	26 47 ...	●	17	35	14	10	33	180	32	24	
B. S. 1253	Kartigai ...	2	N	15	29	2	D	13	Margasira ...	1	N	7	58 37 8		3	14	16	9	6	210	4	14	
(N.) Kalayukta.	Margali ...	3	D	14	29	3	Ja	11	Pausha ...	3	D	7	30 27 ...		47	46	18	7	40	239	36	4	
A. D. 1848	Tai ...	4	Ja	12	30	5	F	10	Magha ...	5	Ja	6	2 18 ...		28	12	20	6	13	269	7	54	
H. 1265	Masi ...	6	F	11	30	7	Mr	11	Phalguna ...	6	F	4	34 8 5		1	5	22	4	47	298	39	45	
Nov. 27	Panguni ...	1	Mr	12	30	2	Ap	10	Chaitra ...	1	Mr	5	5 58 ...	○	29	44	24	3	19	328	11	35	
K. Y. 4949	Chittirai ...	3	Ap	11	31	5	My	11	Vaisakha ...	2	Ap	3	37 48 ...		55	27	26	1	54	357	43	25	
Sak. 1770	Vaikasi ...	6	My	12	31	1	Je	11	Jyeshtha ...	5	My	3	9 38 ...		15	32	0	27	11	21	59	45	
Vik. 1905	Ani ...	2	Je	12	32	5	Jl	13	Ashada ...	5	Je	1	41 28 ...		34	4	2	25	45	51	31	34	
(S.) Kilaka	Adi ...	6	Jl	14	31	1	Au	13	Sravana ...	7	Jl	1	13 18 Je. 30		53	32	4	24	18	81	3	24	
K. 1023 (S. M.)	Avani ...	2	Au	14	31	4	S	13	Bhadrupada ...	1	Jl	30	45 8 ...		15	34	6	22	52	110	35	14	
K. 1023 (N. M.)	Purattasi ...	5	S	14	31	7	O	14	Asvina ...	3	Au	29	16 58 28	○	43	31	8	21	26	140	7	4	
3 g, 45 p.	Aippasi ...	1	O	15	30	2	N	13	Kartika ...	5	S	27	48 48 ...	●	19	43	10	19	59	169	38	54	
B. S. 1254	Kartigai ...	3	N	14	29	3	D	12	Margasira ...	4	O	27	20 38 ...		1	13	12	18	33	199	10	44	
(N.) Siddharthin.	Margali ...	4	D	13	30	5	Ja	11	Pausha ...	6	N	25	52 29 ...		48	59	14	17	6	228	42	35	
A. D. 1849	Tai ...	6	Ja	12	29	6	F	9	Magha ...	7	N	25	24 19 ...		37	43	16	15	40	258	14	25	
H. 1266	Masi ...	7	F	10	30	1	Mr	11	Phalguna ...	2	D	25	24 19 ...		37	43	16	15	40	258	14	25	
Nov. 17	Panguni ...	2	Mr	12	30	3	Ap	10	Chaitra ...	3	Ja	23	56 9 24		22	53	18	14	14	287	46	15	
K. Y. 4950	Chittirai ...	4	Ap	11	31	6	My	11	Vaisakha ...	5	F	22	27 59 23	○	1	26	20	12	47	317	18	5	
Sak. 1771	Vaikasi ...	7	My	12	32	3	Je	12	Jyeshtha ...	5	F	22	0 0 ...		32	36	22	11	21	346	49	55	
Vik. 1906	Ani ...	4	Je	13	31	6	Jl	13	Ashada ...	7	Mr	24	0 0 ...		32	36	22	11	21	346	49	55	
(S.) Saumya.	Adi ...	7	Jl	14	32	3	Au	14	Sravana ...	1	Je	22	3 30 ...		17	5	26	8	28	40	38	4	
K. 1024 (S. M.)	Avani ...	4	Au	15	31	6	S	14	Bhadrupada ...	4	Je	20	35 19 ...		34	8	0	33	45	70	9	54	
K. 1024 (N. M.)	Purattasi ...	7	S	15	30	1	O	14	Asvina ...	6	Jl	20	7 10 19		51	0	2	32	19	99	41	44	
19 g, 16 p.	Aippasi ...	2	O	15	30	3	N	13	Kartika ...	7	Au	18	39 0 ...	○	10	15	4	30	52	129	13	34	
B. S. 1255	Kartigai ...	4	N	14	30	5	D	13	Margasira ...	2	S	17	10 50 16		36	9	6	29					

TABLE XII.—General Ephemeris A.D. 1850—A.D. 1855.

Commence- ment of years in dif- ferent eras.	Tamil month.	Tamil Month						Lunar month.	New Moon												Deduct for Nakshatras	Deduct for Yogas.	
		Beginning			End				Ending moment of New Moon Tithi. ('s Anom. ☉'s Anom.														
		Week-day	Month	Day	Last Day	Week-day	Month		Day	Mean						Actual							
										Week-day	Month	Day (mean)	Ghatikas	Palas	Day (actual)	Ghatikas	Palas	Day	Ghatikas	Palas			Day	Ghatikas	Palas
K. Y. 4951	Chittirai ...	6 Ap	12	31	1 My	12	Vaisakha ...	5 Ap 11	53 41 12	28 57	20 19 17	0 12 43	0 day, 0 ghat., 57 palas.	0 " 1 " 46 "									
Sak. 1772	Vaikasi ...	2 My	13	31	4 Je	12	Jyeshtha ...	7 My 11	25 31 ...	55 46	22 17 51	29 44 33											
Vik. 1907	Ani ...	5 Je	13	32	1 Jl	14	Ashada ...	1 Je 9	57 21 10	16 54	24 16 24	59 16 24											
(S.) Sadharana.	Adi ...	2 Jl	15	31	4 Au	14	Sravana ...	3 Jl 9	29 11 ...	34 31	26 14 58	88 48 14											
K. 1025 (S. M.)	Avani ...	5 Au	15	31	7 S	14	Bhadrpada ...	5 Au 8	1 1 7	51 31	0 40 15	118 20 4											
K. 1025 (N. M.)	Purattasi ...	1 S	15	30	2 O	14	Asvina ...	6 S 6	32 51 ...	10 39	2 38 49	147 51 54											
34 g., 47 p.	Aippasi ...	3 O	15	30	4 N	13	Kartika ...	1 O 6	4 41 5	33 56	4 37 22	177 23 44											
B. S. 1256	Kartigai ...	5 N	14	30	6 D	13	Margasira ...	2 N 4	36 31 ...	3 16	6 35 56	206 55 34											
N. Durmati	Margali ...	7 D	14	29	7 Ja	11	Pausha ...	4 D 4	8 22 3	39 41	8 34 29	236 27 24											
A. D. 1851	Tai ...	1 Ja	12	30	2 F	10	Magha ...	5 Ja 2	40 12 ...	22 55	10 33 3	265 59 14											
H. 1268	Masi ...	3 F	11	29	3 Mr	11	Phalguna ...	7 F 1	12 2 ...	10 38	12 31 37	295 31 4											
Oct. 26, 27	Panguni ...	4 Mr	12	31	6 Ap	11	Chaitra ...	1 Mr 2	43 52 ...	56 35	14 30 10	325 2 54											
								3 Ap 1	15 42 ...	42 34	16 28 43	354 34 44											
K. Y. 4952	Chittirai ...	7 Ap	12	31	2 My	12	Vaisakha ...	4 Ap 30	47 32	My.1.19 56	18 27 17	18 51 4	1 day, 24 ghat., 36 palas.	2 " 37 " 26 "									
Sak. 1773	Vaikasi ...	3 My	13	31	5 Je	12	Jyeshtha ...	6 My 30	19 22 ...	49 8	20 25 51	48 22 54											
Vik. 1908	Ani ...	6 Je	13	32	2 Jl	14	Ashada ...	7 Je 28	51 12 29	14 44	22 24 25	77 54 44											
(S.) Virodhakrit.	Adi ...	3 Jl	15	31	5 Au	14	Sravana ...	2 Jl 28	23 2 ...	33 57	24 22 58	107 26 34											
K. 1026 (S. M.)	Avani ...	6 Au	15	31	1 S	14	Bhadrpada ...	3 Au 26	54 53 ...	52 58	26 21 32	136 58 24											
K. 1026 (N. M.)	Purattasi ...	2 S	15	31	4 O	15	Asvina ...	5 S 25	26 43 ...	12 53	0 46 49	166 30 14											
50 g., 19 p.	Aippasi ...	5 O	16	30	6 N	14	Kartika ...	6 O 24	58 33 ...	35 50	2 45 22	196 2 4											
B. S. 1257	Kartigai ...	7 N	15	29	7 D	13	Margasira ...	1 N 23	30 23 ...	3 12	4 43 56	225 33 54											
(N) Dundabhi	Margali ...	1 D	14	29	1 Ja	11	Pausha ...	3 D 23	2 13 22	36 7	6 42 30	255 5 44											
A. D. 1852	Tai ...	2 Ja	12	30	3 F	10	Magha ...	4 Ja 21	34 3 ...	14 34	8 41 3	284 37 33											
H. 1269	Masi ...	4 F	11	30	5 Mr	11	Phalguna ...	6 F 20	5 53 19	57 23	10 39 37	314 9 23											
Oct. 15	Panguni ...	6 Mr	12	30	7 Ap	10	Chaitra ...	7 Mr 20	37 43 ...	42 16	12 38 10	343 41 13											
K. Y. 4953	Chittirai ...	1 Ap	11	31	3 My	11	Vaisakha ...	2 Ap 19	9 34 ...	25 56	14 36 44	7 57 33	0 day, 35 ghat., 43 palas.	1 " 6 " 28 "									
Sak. 1774	Vaikasi ...	4 My	12	31	6 Je	14	Jyeshtha ...	3 My 18	41 24 19	5 49	16 35 18	37 29 23											
Vik. 1909	Ani ...	7 Je	12	32	3 Jl	13	Ashada ...	5 Je 17	13 14 ...	38 45	18 33 51	67 1 13											
(S.) Paridhavi.	Adi ...	4 Jl	14	31	6 Au	13	Sravana ...	6 Jl 16	45 4 17	6 52	20 32 25	96 33 4											
K. 1027 (S. M.)	Avani ...	7 Au	14	32	3 S	14	Bhadrpada ...	1 Au 15	16 54 ...	31 27	22 30 58	126 4 54											
K. 1027 (N. M.)	Purattasi ...	4 S	15	30	5 O	14	Asvina ...	2 S 13	48 44 ...	54 7	24 29 32	155 36 44											
5 g., 50 p.	Aippasi ...	6 O	15	30	7 N	13	Kartika ...	4 O 13	20 34 ...	16 40	26 28 6	185 8 34											
B. S. 1258	Kartigai ...	1 N	14	29	1 D	12	Margasira ...	5 N 11	52 24 ...	40 28	0 53 23	214 40 24											
(N) Rudhirodgarin.	Margali ...	2 D	13	30	3 Ja	11	Pausha ...	7 D 11	24 14 ...	6 50	2 51 59	244 12 14											
A. D. 1853	Tai ...	4 Ja	12	29	4 F	9	Magha ...	1 Ja 9	56 5 ...	36 44	4 50 30	273 44 4											
H. 1270	Masi ...	5 F	10	30	6 Mr	11	Phalguna ...	3 F 8	27 55 ...	10 3	6 49 3	303 15 54											
Oct. 4	Panguni ...	7 Mr	12	30	1 Ap	10	Chaitra ...	5 Mr 10	0 0 9	46 45	8 47 37	332 47 45											
								6 Ap 8	31 35 ...	26 5	10 46 11	362 19 35											
K. Y. 4954	Chittirai ...	2 Ap	11	31	4 My	11	Vaisakha ...	1 My 8	3 25 ...	6 32	12 44 44	26 35 55	1 day, 59 ghat., 23 palas.	3 " 42 " 8 "									
Sak. 1775	Vaikasi ...	5 My	12	32	1 Je	12	Jyeshtha ...	2 Je 6	35 15 ...	45 58	14 43 18	56 7 45											
Vik. 1910	Ani ...	2 Je	13	31	4 Jl	13	Ashada ...	4 Jl 6	7 5 ...	22 33	16 41 51	85 39 35											
(S.) Pramadi	Adi ...	5 Jl	14	32	1 Au	14	Sravana ...	5 Au 4	38 55 ...	55 47	18 40 25	115 11 24											
K. 1028 (S. M.)	Avani ...	2 Au	15	31	4 S	14	Bhadrpada ...	7 S 3	10 46 ...	25 57	20 38 59	144 43 14											
K. 1028 (N. M.)	Purattasi ...	5 S	15	30	6 O	14	Asvina ...	1 O 2	42 36 ...	53 54	22 37 32	174 15 4											
21 g., 21 p.	Aippasi ...	7 O	15	30	1 N	13	Kartika ...	3 N 1	14 26 ...	20 26	24 36 6	203 46 54											
B. S. 1259	Kartigai ...	2 N	14	30	3 D	13	Margasira ...	4 N 30	46 6 ...	46 20	26 34 39	233 18 44											
(N.) Raktaksha.	Margali ...	4 D	14	29	4 Ja	11	Pausha ...	6 D 30	18 6 ...	12 52	0 59 56	262 50 34											
A. D. 1854	Tai ...	5 Ja	12	29	5 F	9	Magha ...	7 Ja 28	49 56 ...	40 55	2 58 30	292 22 24											
H. 1271.	Masi ...	6 F	10	30	7 Mr	11	Phalguna ...	2 F 27	21 46 ...	9 42	4 57 4	321 54 14											
Sep. 24	Panguni ...	1 Mr	12	31	3 Ap	11	Chaitra ...	3 Mr 28	53 36 ...	39 38	6 55 37	351 26 4											
K. Y. 4955	Chittirai ...	4 Ap	12	31	6 My	12	Vaisakha ...	5 Ap 27	25 26 ...	12 20	8 54 11	15 42 23	1 day, 10 ghat., 29 palas.	2 " 11 " 10 "									
Sak. 1776	Vaikasi ...	7 My	13	31	2 Je	12	Jyeshtha ...	6 My 26	57 16 ...	47 31	10 52 44	45 14 13											
Vik. 1911	Ani ...	3 Je	13	32	6 Jl	14	Ashada ...	1 Je 25	29 6 ...	24 34	12 51 18	74 46 3											
(S.) Ananda	Adi ...	7 Jl	15	31	2 Au	14	Sravana ...	3 Jl 25	0 57 ...	2 42	14 49 52	104 17 53											
K. 1029 (S. M.)	Avani ...	3 Au	15	31	5 S	14	Bhadrpada ...	4 Au 23	32 47 ...	40 36	16 48 25	133 49 44											
K. 1029 (N. M.)	Purattasi ...	6 S	15	31	1 O	15	Asvina ...	6 S 22	4 37 ...	17 4	18 46 59	163 21 34											
36 g., 52 p.	Aippasi ...	2 O	16	29	2 N	13	Kartika ...	7 O 21	36 27 ...	52 8	20 45 32	192 53 24											
B. S. 1260	Kartigai ...	3 N	14	30	4 D	13	Margasira ...	2 N 20	8 17 ...	23 58	22 44 6	222 25 14											
(N.) Krodhana.	Margali ...	5 D	14	29	5 Ja	11	Pausha ...	3 D 19	40 7 ...	52 13	24 42 40	251 57 4											
A. D. 1855	Tai ...	6 Ja	12	30	7 F	10	Magha ...	5 Ja 18	11 58 ...	19 35	26 41 13	281 28 54											
H. 1272	Masi ...	1 F	11	30	2 Mr	12	Phalguna ...	6 F 16	43 48 ...	45 15	1 6 30	311 0 44											
Sep. 13	Panguni ...	3 Mr	13	30	4 Ap	11	Chaitra ...	1 Mr 18	15 38 ...	10 15	3 5 4	340 32 34											

TABLE XII.—General Ephemeris A.D. 1855—A.D. 1860.

Commence- ment of years in dif- ferent eras.		Tamil month.	Tamil Month						Lunar month.	New Moon Ending moment of New Moon Tithi (☾'s Anom. ☉'s Anom.)												Deduct for Nakshatras	Deduct for
			Beginning			End				Mean		Actual											
			Week-day	Month	Day	Last Day	Week-day	Month		Day	Ghatikas	Palas	Day (actual)	Ghatikas	Palas	Day	Ghatikas	Palas	Day	Ghatikas	Palas		
			Month	Day	Month	Day	Month	Day		Month	Day	Month	Day (mean)	Month	Day	Month	Day	Month	Day	Month	Day		
K. Y. 4956	Chittirai...	5 Ap	12	31	7 My	12	Vaisakha	...	2 Ap	16	47 28	...	35 30	5	3 38	4	48 53	0 day, 36 palas.					
Sak. 1777	Vaikasi ...	1 My	13	31	3 Je	12	Jyeshtha	...	4 My	16	19 18	...	2 12	7	2 11	34	20 43						
Vik. 1912	Ani ...	4 Je	13	32	7 Ji	14	Ashada	...	5 Je	14	51 8	...	31 29	9	0 45	63	52 33						
(S.) Rakshasa	Adi ...	1 Ji	15	31	3 Au	14	Sravana	...	7 Ji	14	22 58	...	4 30	10	59 18	93	24 23						
K. 1030 (S. M.)	Avani ...	4 Au	15	31	6 S	14	Bhadrapada	...	1 Au	12	54 48	...	41 49	12	57 52	122	56 13	0 day, 21 ghat., 36 palas.					
K. 1030 (N. M.)	Purattasi ...	7 S	15	31	2 O	15	Asvina	...	3 S	11	26 38	...	22 38	14	56 25	152	28 3						
52 g., 24 p.	Aippasi ...	3 O	16	30	4 N	14	Kartika	...	4 O	10	58 28	...	4 38	16	54 59	181	59 54						
B. S. 1261	Kartigai...	5 N	15	29	5 D	13	Margasira	...	6 N	9	30 18	...	45 13	18	53 33	211	31 44						
(N.) Kshaya	Margali ...	6 D	14	30	7 Ja	12	Pausha	...	1 D	9	2 10	...	22 47	20	52 7	241	3 34	0 day, 21 ghat., 36 palas.					
A. D. 1856	Tai ...	1 Ja	13	29	1 F	10	Magha	...	2 Ja	7	33 59	...	56 13	22	50 40	270	35 24						
H. 1273	Masi ...	2 F	11	30	3 Mr	11	Phalguna	...	4 F	6	5 49	...	25 21	24	49 14	300	7 14						
Sep. 1	Panguni...	4 Mr	12	30	5 Ap	10	Chaitra	...	5 Mr	6	37 39	...	50 33	26	47 47	329	39 4						
K. Y. 4957	Chittirai...	6 Ap	11	31	1 My	11	Vaisakha	...	7 Ap	5	9 29	...	13 47	1	13 4	359	10 54	1 day, 45 ghat., 16 palas.					
Sak. 1778	Vaikasi ...	2 My	12	31	4 Je	11	Jyeshtha	...	1 My	4	41 19	...	34 7	3	11 38	23	27 13						
Vik. 1913	Ani ...	5 Je	12	32	1 Ji	13	Ashada	...	3 Je	3	13 9	...	55 45	5	10 11	52	59 3						
(S.) Anala	Adi ...	2 Ji	14	32	5 Au	14	Sravana	...	4 Ji	2	44 59	...	19 49	7	8 45	82	30 53						
K. 1031 (S. M.)	Avani ...	6 Au	15	31	1 S	14	Bhadrapada	...	6 Au	1	16 50	...	48 26	9	7 19	112	2 43	1 day, 45 ghat., 16 palas.					
K. 1031 (N. M.)	Purattasi...	2 S	15	30	3 O	14	Asvina	...	7 Au	30	48 40	...	23 15	11	5 52	141	34 33						
7 g., 55 p.	Aippasi ...	4 O	15	30	5 N	13	Kartika	...	2 S	29	20 30	...	4 19	13	4 26	171	6 23						
B. S. 1262	Kartigai ...	6 N	14	29	6 D	12	Margasira	...	3 O	28	52 20	...	49 46	15	2 59	200	38 13						
(N.) Prabhava	Margali ...	7 D	13	30	1 Ja	11	Pausha	...	5 N	27	24 10	...	35 51	17	1 33	230	10 3	1 day, 45 ghat., 16 palas.					
A. D. 1857	Tai ...	2 Ja	12	29	2 F	9	Magha	...	6 D	26	56 0	...	19 6	19	0 6	259	41 54						
H. 1274	Masi ...	3 F	10	30	4 Mr	11	Phalguna	...	1 Ja	25	27 50	...	56 59	20	58 40	289	13 44						
Aug. 22	Panguni ...	5 Mr	12	30	6 Ap	10	Chaitra	...	2 F	23	59 40	...	28 35	22	57 14	318	45 34						
K. Y. 4958	Chittirai...	7 Ap	11	31	2 My	11	Vaisakha	...	4 Mr	25	31 30	...	54 25	24	55 47	348	17 24	0 day, 56 ghat., 23 palas.					
Sak. 1779	Vaikasi ...	3 My	12	32	6 Je	12	Jyeshtha	...	6 Ap	24	3 22	...	15 47	26	54 21	12	33 43						
Vik. 1914	Ani ...	7 Je	13	31	2 Ji	13	Ashada	...	7 My	23	35 11	...	34 23	1	19 38	42	5 33						
(S.) Pingala	Adi ...	3 Ji	14	32	6 Au	14	Sravana	...	2 Je	22	7 1 21	...	52 36	3	18 12	71	37 23						
K. 1032 (S. M.)	Avani ...	7 Au	15	31	2 S	14	Bhadrapada	...	3 Ji	21	38 51	...	12 19	5	16 45	101	9 13	0 day, 56 ghat., 23 palas.					
K. 1032 (N. M.)	Purattasi...	3 S	15	30	4 O	14	Asvina	...	5 Au	20	10 41	...	37 43	7	15 19	130	41 3						
23 g., 26 p.	Aippasi ...	5 O	15	30	6 N	13	Kartika	...	6 S	18	42 31	...	9 16	9	13 52	160	12 53						
B. S. 1263	Kartigai ...	7 N	14	30	1 D	13	Margasira	...	1 O	18	14 21	...	48 29	11	12 26	189	44 43						
(N.) Sukla	Margali ...	2 D	14	29	2 Ja	11	Pausha	...	2 N	16	46 11	...	34 21	13	11 0	219	16 33	0 day, 56 ghat., 23 palas.					
A. D. 1858	Tai ...	3 Ja	12	30	4 F	10	Magha	...	4 D	16	18 2	...	23 33	15	9 33	248	48 23						
H. 1275	Masi ...	5 F	11	29	5 Mr	11	Phalguna	...	5 Ja	14	49 52	...	11 13	17	8 7	278	20 14						
Aug. 11	Panguni...	6 Mr	12	31	1 Ap	11	Chaitra	...	7 F	13	21 42	...	53 19	19	6 40	307	52 4						
K. Y. 4959	Chittirai...	2 Ap	12	31	4 My	12	Vaisakha	...	1 Mr	14	53 32	...	28 1	21	5 14	337	23 54	0 day, 7 ghat., 30 palas.					
Sak. 1780	Vaikasi ...	5 My	13	31	7 Je	12	Jyeshtha	...	3 Ap	13	25 22	...	55 32	23	3 48	1	40 13						
Vik. 1915	Ani ...	1 Je	13	32	4 Ji	14	Ashada	...	4 My	12	57 12	...	17 15	25	2 21	31	12 3						
(S.) Kalayukta	Adi ...	5 Ji	15	31	7 Au	14	Sravana	...	6 Je	11	29 2	...	35 26	27	0 55	60	43 53						
K. 1033 (S. M.)	Avani ...	1 Au	15	31	3 S	14	Bhadrapada	...	1 Ji	11	0 52	...	51 47	1	26 12	90	15 43	0 day, 7 ghat., 30 palas.					
K. 1033 (N. M.)	Purattasi...	4 S	15	31	6 O	15	Asvina	...	2 Au	9	32 42	...	9 59	3	24 45	119	47 33						
38 g., 57 p.	Aippasi ...	7 O	16	29	7 N	13	Kartika	...	4 S	8	4 33	...	32 22	5	23 19	149	19 23						
B. S. 1264	Kartigai ...	1 N	14	30	2 D	13	Margasira	...	5 O	7	36 23	...	0 58	7	21 53	178	51 13						
(N.) Pramoda	Margali ...	3 D	14	29	3 Ja	11	Pausha	...	7 N	6	8 13	...	37 6	9	20 26	208	23 3	0 day, 7 ghat., 30 palas.					
A. D. 1859	Tai ...	4 Ja	12	30	5 F	10	Magha	...	1 D	5	40 3	...	20 48	11	19 0	237	54 53						
H. 1276	Masi ...	6 F	11	30	7 Mr	12	Phalguna	...	3 Ja	4	11 53	...	9 43	13	17 33	267	26 43						
July 31	Panguni ...	1 Mr	13	30	2 Ap	11	Chaitra	...	4 F	2	43 43	...	59 18	15	16 7	296	58 33						
K. Y. 4960	Chittirai...	3 Ap	12	31	5 My	12	Vaisakha	...	6 Mr	4	15 33	...	44 29	17	14 41	326	30 24	1 day, 31 ghat., 9 palas.					
Sak. 1781	Vaikasi ...	6 My	13	31	1 Je	12	Jyeshtha	...	7 Ap	2	47 23	...	22 23	19	13 14	356	2 14						
Vik. 1916	Ani ...	2 Je	13	32	5 Ji	14	Ashada	...	3 Ap	13	25 22	...	55 32	23	3 48	1	40 13						
(S.) Siddharthi	Adi ...	6 Ji	15	31	1 Au	14	Sravana	...	4 My	12	57 12	...	17 15	25	2 21	31	12 3						
K. 1034 (S. M.)	Avani ...	2 Au	15	31	4 S	14	Bhadrapada	...	6 Je	11	29 2	...	35 26	27	0 55	60	43 53	1 day, 31 ghat., 9 palas.					
K. 1034 (N. M.)	Purattasi...	5 S	15	31	7 O	15	Asvina	...	1 Ji	11	0 52	...	51 47	1	26 12	90	15 43						
54 g., 29 p.	Aippasi ...	1 O	16	30	2 N	14	Kartika	...	2 Au	9	32 42	...	9 59	3	24 45	119	47 33						
B. S. 1265	Kartigai ...	3 N	15	29	3 D	13	Margasira	...	4 S	8	4 33	...	32 22	5	23 19	149	19 23						
(N.) Prajapati	Margali ...	4 D	14	30	4 Ja	12	Pausha	...	5 O	7	36 23	...	0 58	7	21 53	178	51 13	1 day, 31 ghat., 9 palas.					
A. D. 1860	Tai ...	6 Ja	13	29	6 F	10	Magha	...	7 N	6	8 13	...	37 6	9	20 26	208	23 3						
H. 1277	Masi ...	7 F	11	30	1 Mr	11	Phalguna	...	1 D	5	40 3	...	20 48	11	19 0	237	54 53						
July 20	Panguni ...	2 Mr	12	30	3 Ap	10	Chaitra	...	3 Ja	4	11 53	...	9 43	13	17 33	267	26 43						

TABLE XII.—General Ephemeris A.D. 1860—A.D. 1865.

		Tamil Month						New Moon																					
		Beginning				End				Ending moment																			
										of New Moon Tithi. ('s Anom. ☉'s Anom.																			
										Mean Actual																			

TABLE XII.—General Ephemeris A.D. 1865—A.D. 1870.

		Tamil Month							New Moon Ending moment of New Moon Tithi. ('s Anom. ☉'s Anom.												
		Beginning			End					Mean			Actual								
Commence- ment of years in dif- ferent eras.	Tamil month.	Week-day	Month	Day	Last day	Week-day	Month	Day	Lunar month.	Week-day	Month	Day (mean)	Ghatikas Palas	Day (actual)	Ghatikas Palas	Day	Ghatikas Palas	Day	Ghatikas Palas	Deduct for Nakshatras	
K. Y. 1866 Sak. 1787 Vik. 1922 (S.) Krodhana. K. 1040 (S. M.) K. 1040 (N. M.) 27 g., 36 p. B. S. 1271 (N.) Isvara A. D. 1866 H. 1283 May 16	Chittirai	3	Ap	11	31	5	M	11	Vaisakha	...	3	Ap	25	35 2	...	34 12	2 5 28	14 1 12	1 day, 2 ghat., 55 palas.		
	Vaikasi	...	6	My	12	32	2	Je	12	Jyeshtha	...	5	My	25	6 52 24	54 5	4 4 1	43 33 2			
	Ani	...	3	Je	13	31	5	Jl	13	Ashada	...	6	Je	23	38 42	...	16 11	6 2 35		73 4 52	
	Adi	...	6	Jl	14	32	2	Au	14	Sravana	...	1	Jl	23	10 33 22	42 0	8 1 8	192 36 42			
	Avani	...	3	Au	15	31	5	S	14	Bhadrapada	...	2	Au	21	42 23	...	13 32	9 59 41		132 8 32	
	Purattasi	...	6	S	15	30	7	O	14	Asvina	...	4	S	20	14 13 19	52 28	11 58 16	161 40 22			
	Aippasi	...	1	O	15	30	2	N	13	Kartika	...	5	O	19	46 3	...	35 55	13 56 49		191 12 13	
	Kartigai	...	3	N	14	30	4	D	13	Margasira	...	7	N	18	17 53	...	22 44	15 55 23		220 44 3	
	Margali	...	5	D	14	29	5	Ja	11	Pausha	...	1	D	17	49 43 18	8 18	17 53 56	250 15 53			
	Tai	...	6	Ja	12	30	7	F	10	Magha	...	3	Ja	16	21 33	...	49 20	19 52 30		279 47 43	
K. Y. 1867 Sak. 1788 Vik. 1923 (S.) Kshaya K. 1041 (S. M.) K. 1041 (N. M.) 43 g., 7 p. B. S. 1272 (N.) Bahudhanya. A. D. 1867 H. 1284 May 5	Chittirai	5	Ap	12	31	7	My	12	Vaisakha	...	7	Ap	14	57 4 15	15 36	25 48 11	3 7 42	0 day, 14 ghat., 2 palas.			
	Vaikasi	...	1	My	13	31	3	Je	12	Jyeshtha	...	2	My	14	28 54	...	34 56		0 13 28	32 39 32	
	Ani	...	4	Je	13	32	7	Jl	14	Ashada	...	4	Je	13	0 44 12	52 42	2 12 2		62 11 22		
	Adi	...	1	Jl	15	31	3	Au	14	Sravana	...	5	Jl	12	32 34	...	11 23		4 10 35	91 43 12	
	Avani	...	4	Au	15	31	6	S	14	Bhadrapada	...	1	S	9	36 14	...	1 42		8 7 42	150 46 52	
	Purattasi	...	7	S	15	31	2	O	15	Asvina	...	3	O	9	8 4 8	37 52	10 6 16		180 18 42		
	Aippasi	...	3	O	16	30	4	N	14	Kartika	...	4	N	7	39 54	...	20 18		12 4 49	209 50 33	
	Kartigai	...	5	N	15	29	5	D	13	Margasira	...	6	D	7	11 45	...	8 44		14 3 23	239 22 23	
	Margali	...	6	D	14	29	6	Ja	11	Pausha	...	7	Ja	5	43 35	...	53 2		16 1 57	268 54 13	
	Tai	...	7	Ja	12	30	1	F	10	Magha	...	2	F	4	15 25	...	43 20		18 0 30	298 26 3	
K. Y. 1868 Sak. 1789 Vik. 1924 (S.) Prabhava K. 1042 (S. M.) K. 1042 (N. M.) 58 g., 39 p. B. S. 1273 (N.) Pramathin. A. D. 1868 H. 1285 April 24	Chittirai	6	Ap	12	31	1	My	12	Vaisakha	...	6	My	3	50 55 4	16 39	23 56 11	21 46 2	1 day, 37 ghat., 42 palas.			
	Vaikasi	...	2	My	13	31	4	Je	12	Jyeshtha	...	1	Je	2	22 45	...	35 59		25 54 44	51 17 52	
	Ani	...	5	Je	13	32	1	Jl	14	Ashada	...	2	Jl	1	54 35	...	52 48		0 20 2	80 49 42	
	Adi	...	2	Jl	15	31	4	Au	14	Sravana	...	4	Jl	31	26 25	...	9 53		2 18 35	110 21 32	
	Avani	...	5	Au	15	31	7	S	14	Bhadrapada	...	5	Au	29	58 16	...	30 2		4 17 19	139 53 23	
	Purattasi	...	1	S	15	31	3	O	15	Asvina	...	7	S	28	30 6 27	55 28	6 15 42		169 25 13		
	Aippasi	...	4	O	16	30	5	N	14	Kartika	...	2	O	23	1 56 27	27 57	8 14 16		198 57 3		
	Kartigai	...	6	N	15	29	6	D	13	Margasira	...	3	N	26	33 46	...	8 8		10 12 50	228 28 53	
	Margali	...	7	D	14	30	1	Ja	12	Pausha	...	5	D	26	5 36 25	58 33	12 11 23		258 0 43		
	Tai	...	2	Ja	13	29	2	F	10	Magha	...	6	Ja	24	37 26	...	44 45		14 9 57	287 32 33	
K. Y. 1869 Sak. 1790 Vik. 1925 (S.) Vibhava K. 1043 (S. M.) K. 1043 (N. M.) 14 g., 10 p. B. S. 1274 (N.) Vikrama A. D. 1869 H. 1286 April 13	Chittirai	7	Ap	11	31	2	My	11	Vaisakha	...	4	Ap	22	12 57	...	47 46	20 5 38	10 52 32	0 day, 48 ghat., 49 palas.		
	Vaikasi	...	3	My	12	32	6	Je	12	Jyeshtha	...	5	My	21	44 47 22	14 8	22 4 12	40 24 22			
	Ani	...	7	Je	13	32	2	Jl	13	Ashada	...	7	Je	20	16 37	...	35 39	24 2 45		69 56 12	
	Adi	...	3	Jl	14	32	6	Au	14	Sravana	...	1	Jl	19	48 27	...	53 9	26 1 18		99 28 2	
	Avani	...	7	Au	15	31	2	S	14	Bhadrapada	...	3	Au	18	20 17	...	10 41	0 26 35		128 59 52	
	Purattasi	...	3	S	15	30	4	O	14	Asvina	...	4	S	16	52 7	...	31 33	2 25 9		158 31 42	
	Aippasi	...	5	O	15	30	6	N	13	Kartika	...	6	O	16	23 57 15	54 19	4 23 43	188 3 32			
	Kartigai	...	7	N	14	30	1	D	13	Margasira	...	7	N	14	55 48	...	24 14	6 22 16		217 35 23	
	Margali	...	2	D	14	29	2	Ja	11	Pausha	...	2	D	14	27 38	...	0 31	8 20 50		247 7 13	
	Tai	...	3	Ja	12	29	3	F	9	Magha	...	3	Ja	12	59 28	...	43 22	10 19 24		276 39 3	
K. Y. 1870 Sak. 1791 Vik. 1926 (S.) Sukla K. 1044 (S. M.) K. 1044 (N. M.) 29 g., 41 p. B. S. 1275 (N.) Vrisha A. D. 1870 H. 1287 April 2, 3	Chittirai	1	Ap	11	31	3	My	11	Vaisakha	...	1	Ap	11	34 58 12	0 43	16 15 4	365 14 33	2 days, 12 ghat., 28 palas.			
	Vaikasi	...	4	My	12	32	7	Je	12	Jyeshtha	...	4	Je	9	38 39 10	7 16	20 12 12		59 2 42		
	Ani	...	1	Je	13	31	3	Jl	13	Ashada	...	6	Jl	9	10 29	...	31 40		22 10 45	88 34 32	
	Adi	...	4	Jl	14	32	7	Au	14	Sravana	...	7	Au	7	42 19	...	53 11		24 9 19	118 6 22	
	Avani	...	1	Au	15	31	3	S	14	Bhadrapada	...	2	S	6	14 9	...	12 31		26 7 52	147 38 12	
	Purattasi	...	4	S	15	30	5	O	14	Asvina	...	3	O	5	45 59	...	33 22		0 33 9	177 10 2	
	Aippasi	...	6	O	15	30	7	N	13	Kartika	...	5	N	4	17 49 3	56 57	2 31 43		206 41 52		
	Kartigai	...	1	N	14	30	2	D	13	Margasira	...	6	D	3	49 39	...	24 46		4 30 17	236 13 43	
	Margali	...	...	D	14	29	3	Ja	11	Pausha	...	1	Ja	2	21 29 1	57 38	6 28 50		265 45 33	
	Tai	...	4	Ja	12	30	5	F	10	Magha	...	2	Ja	31	53 19	...	35 14		8 27 24	295 17 23	

TABLE XII.—General Ephemeris A.D. 1870—A.D. 1875.

Tamil Month										New Moon										Ending moment of New Moon Tithi.		(s Anom. ☉s Anom.)	
Commence-ment of years in dif-ferent eras.		Tamil month.		Beginning		End		Lunar month.		Beginning		End		Mean		Actual							
Week-day	Month	Day	Last Day	Week-day	Month	Day		Week-day	Month	Day (mean)	Ghatikas	Palas	Day (actual)	Ghatikas	Palas	Day	Ghatikas	Palas	Day	Ghatikas	Palas	Deduct for Nakshatras	Deduct for Yugas.
K. Y. 4971	Chittirai	...	3 Ap 12 31	5 My 12	Vaisakha	...	7 Ap 30	28 49	...	42 58	14 23	5	18 37	22									
Sak. 1792	Vaikasi	...	6 My 13 31	1 Je 12	Jyeshtha	...	2 My 30	0 40	...	21 16	16 21	38	48 9	12									
Vik. 1927	Ani	...	2 Je 13 32	5 Ji 14	Ashada	...	3 Je 28	32 30	...	55 24	18 20	12	77 41	2									
(S.) Pramoda	Adi	...	6 Ji 15 31	1 Au 14	Shravana	...	5 Ji 28	4 20	...	24 21	20 18	45	107 12	52									
K. 1045 (S.M.)	Avani	...	2 Au 15 31	4 S 14	Bhadrapada	...	6 Au 26	36 10	...	50 2	22 17	19	136 44	42									
K. 1045 (N.M.)	Purattasi	...	5 S 15 31	7 O 15	Asvina	...	1 S 25	8 0	...	13 59	24 15	53	166 16	32									
45 g. 12 p.	Aippasi	...	1 O 16 30	2 N 14	Kartika	...	2 O 24	39 50	...	37 37	26 14	27	195 48	22									
B.S. 1276	Kartigai	...	3 N 15 29	3 D 13	Margasira	...	4 N 23	11 40	...	2 13	0 39	43	225 20	12									
(N.) Chitrabhanu.	Margali	...	4 D 14 29	4 Ja 11	Pausa	...	5 D 22	43 31	...	28 58	2 38	17	254 52	2									
A. D. 1871	Tai	...	5 Ja 12 30	6 F 10	Magha	...	7 Ja 21	15 21	20	58 25	4 36	50	284 23	53									
H. 1288	Masi	...	7 F 11 30	1 Mr 12	Phalguna	...	1 F 19	47 11	...	30 48	6 35	24	313 55	43									
Mr. 23	Panguni	...	2 Mr 13 30	3 Ap 11	Chaitra	...	3 Mr 21	19 1	...	6 7	8 33	58	343 27	33									
K. Y. 4972	Chittirai	...	4 Ap 12 31	6 My 12	Vaisakha	...	4 Ap 19	50 51	...	43 54	10 32	31	7 43	52									
Sak. 1793	Vaikasi	...	7 My 13 31	2 Je 12	Jyeshtha	...	6 My 19	22 41	...	22 59	12 31	5	37 15	42									
Vik. 1928	Ani	...	3 Je 13 32	6 Ji 14	Ashada	...	7 Je 17	54 31	18 0	1 47	14 29	38	66 47	32									
(S.) Prajapati	Adi	...	7 Ji 15 31	2 Au 14	Shravana	...	2 Ji 17	26 21	...	38 38	16 28	12	96 19	22									
K. 1046 (S.M.)	Avani	...	3 Au 15 31	5 S 14	Bhadrapada	...	3 Au 15	58 11	16	12 55	18 26	46	125 51	12									
K. 1046 (N.M.)	Purattasi	...	6 S 15 31	1 O 15	Asvina	...	5 S 14	30 1	...	44 33	20 25	19	155 23	2									
0 g. 44 p.	Aippasi	...	2 O 16 30	3 N 14	Kartika	...	7 O 14	1 52	...	13 33	22 23	53	184 54	52									
B. S. 1277	Kartigai	...	4 N 15 29	4 D 13	Margasira	...	1 N 12	33 42	...	41 41	24 22	26	214 26	42									
(N.) Subhanu.	Margali	...	5 D 14 30	6 Ja 12	Pausa	...	3 D 12	5 32	...	8 33	26 21	0	243 58	33									
A. D. 1872	Tai	...	7 Ja 13 29	7 F 10	Magha	...	4 Ja 10	37 22	...	35 6	0 46	17	273 30	23									
H. 1289	Masi	...	1 F 11 30	2 Mr 11	Phalguna	...	6 F 9	9 12	...	1 55	2 44	51	303 2	13									
Mr. 11	Panguni	...	3 Mr 12 30	4 Ap 10	Chaitra	...	7 Mr 9	41 2	...	29 34	4 43	24	332 34	3									
K. Y. 4973	Chittirai	...	5 Ap 11 31	7 My 11	Vaisakha	...	2 Ap 8	12 52	7	58 45	6 41	58	362 5	53									
Sak. 1794	Vaikasi	...	1 My 12 32	4 Je 12	Jyeshtha	...	3 My 7	44 42	...	30 3	8 40	31	26 22	12									
Vik. 1929	Ani	...	5 Je 13 31	7 Ji 13	Ashada	...	5 Je 6	16 33	...	3 55	10 39	5	55 54	2									
(S.) Angirasa	Adi	...	5 Je 13 31	7 Ji 13	Ashada	...	6 Ji 5	48 23	...	40 17	12 37	39	85 25	52									
K. 1047 (S.M.)	Adi	...	1 Ji 14 32	4 Au 14	Shravana	...	6 Ji 5	48 23	...	40 17	12 37	39	85 25	52									
K. 1047 (S.M.)	Avani	...	5 Au 15 31	7 S 14	Bhadrapada	...	1 Au 4	20 13	...	19 8	14 36	12	114 57	42									
K. 1047 (N.M.)	Purattasi	...	1 S 15 30	2 O 14	Asvina	...	2 S 2	52 3	...	57 40	16 34	40	144 29	32									
16 g. 15 p.	Aippasi	...	3 O 15 30	4 N 13	Kartika	...	4 O 2	23 53	...	35 39	18 33	19	174 1	22									
B. S. 1278	Kartigai	...	5 N 14 30	6 D 13	Margasira	...	5 O 31	55 43	N.10	11 20	20 31	53	203 33	12									
(N.) Tarana	Margali	...	7 D 14 29	7 Ja 11	Pausa	...	7 N 30	27 33	...	44 16	22 30	27	233 5	2									
A. D. 1873	Tai	...	1 Ja 12 29	1 F 9	Magha	...	1 D 29	59 23	30	14 55	24 29	0	262 36	52									
H. 1290	Masi	...	2 F 10 30	3 Mr 11	Phalguna	...	3 Ja 28	31 14	...	41 40	26 27	34	292 8	42									
Mr. 1	Panguni	...	4 Mr 12 31	6 Ap 11	Chaitra	...	5 F 27	3 4	...	6 47	0 52	51	321 40	32									
K. Y. 4974	Chittirai	...	7 Ap 12 30	1 My 11	Vaisakha	...	6 Mr 28	34 54	...	30 42	2 51	24	351 12	22									
Sak. 1795	Vaikasi	...	2 My 12 32	5 Je 12	Jyeshtha	...	3 My 7	44 42	...	30 3	8 40	31	26 22	12									
Vik. 1930	Ani	...	6 Je 13 31	1 Ji 13	Ashada	...	5 Je 6	16 33	...	3 55	10 39	5	55 54	2									
(S.) Srimukha	Adi	...	5 Je 13 31	7 Ji 13	Ashada	...	6 Ji 5	48 23	...	40 17	12 37	39	85 25	52									
K. 1048 (S.M.)	Adi	...	1 Ji 14 32	4 Au 14	Shravana	...	6 Ji 5	48 23	...	40 17	12 37	39	85 25	52									
K. 1048 (S.M.)	Avani	...	2 Ji 14 32	5 Au 14	Shravana	...	1 Au 4	20 13	...	19 8	14 36	12	114 57	42									
K. 1048 (N.M.)	Purattasi	...	5 Au 15 31	7 S 14	Bhadrapada	...	2 S 2	52 3	...	57 40	16 34	40	144 29	32									
31 g. 46 p.	Aippasi	...	6 Au 15 31	1 S 14	Bhadrapada	...	2 S 2	52 3	...	57 40	16 34	40	144 29	32									
B. S. 1279	Kartigai	...	2 S 15 30	3 O 14	Asvina	...	4 O 2	23 53	...	35 39	18 33	19	174 1	22									
(N.) Parthiva	Margali	...	4 O 15 30	5 N 13	Kartika	...	5 O 31	55 43	N.10	11 20	20 31	53	203 33	12									
A. D. 1874	Tai	...	6 N 14 30	7 D 13	Margasira	...	7 N 30	27 33	...	44 16	22 30	27	233 5	2									
H. 1291	Masi	...	1 D 14 29	7 Ja 11	Pausa	...	1 D 29	59 23	30	14 55	24 29	0	262 36	52									
Feb. 18	Panguni	...	7 Ja 12 30	3 F 10	Magha	...	3 Ja 28	31 14	...	41 40	26 27	34	292 8	42									
K. Y. 4975	Chittirai	...	2 F 10 30	3 Mr 11	Phalguna	...	5 F 27	3 4	...	6 47	0 52	51	321 40	32									
Sak. 1796	Masi	...	4 F 11 29	4 Mr 11	Phalguna	...	6 Mr 28	34 54	...	30 42	2 51	24	351 12	22									
Vik. 1931	Panguni	...	5 Mr 12 31	7 Ap 11	Chaitra	...	6 Mr 28	34 54	...	30 42	2 51	24	351 12	22									
(S.) Bhava	Adi	...	7 Ap 11	6 Ap 11	Chaitra	...	6 Mr 28	34 54	...	30 42	2 51	24	351 12	22									
K. 1049 (S.M.)	Adi	...	1 Ap 12 31	3 My 12	Vaisakha	...	5 Ap 16	28 45	...	33 4	0 59	25	4 35	11									
K. 1049 (N.M.)	Vaikasi	...	4 My 13 31	6 Je 12	Jyeshtha	...	7 My 16	0 35	15	53 11	2 57	58	34 7	1									
47 g. 17 p.	Ani	...	7 Je 13 32	3 Ji 14	Ashada	...	1 Je 14	32 26	...	13 51	4 56	32	63 38	51									
B. S. 1280	Adi	...	4 Ji 15 31	6 Au 14	Shravana	...	3 Ji 14	4 16	13	37 13	6 55	6	93 10	42									
(N.) Vyava	Adi	...	4 Ji 15 31	6 Au 14	Shravana	...	4 Au 12	36 6	...	5 34	8 53	39	122 42	32									
A. D. 1875	Adi	...	7 Au 15 31	2 S 14	Bhadrapada	...	6 S 11	7 56	10	40 38	10 52	13	152 14	22									
H. 1292	Purattasi	...	3 S 15 31	5 O 15	Asvina	...	7 O 10	39 46	...	22 23	12 50	46	181 46	12									
Feb. 7	Aippasi	...	6 O 16 30	7 N 14	Kartika	...	2 N 9	11 36	...	8 56	14 49	20	211 18	2									
	Kartigai	...	1 N 15 29	1 D 13	Margasira	...	3 D 8	43 26	...	56 0	16 47	54	240 49	52									
	Margali	...	2 D 14 29	2 Ja 11	Pausa	...	5 Ja 7	15 16	...	40 0	18 46	27	270 21	42									
	Tai	...	3 Ja 12 30	4 F 10	Magha	...	6 F 5	47 6	6	18 6	20 45	1	299 53	32									
	Masi	...	5 F 11 30	6 Mr 12	Phalguna	...	1 Mr 7	18 56	...	49 28	22 43	34	329 25	22									
	Panguni	...	7 Mr 13 30	1 Ap 11	Chaitra	...	2 Ap 5	50 46	6	14 44	24 42	8	358 57	11									

TABLE XII.—General Ephemeris A.D. 1875—A.D. 1880.

Commence- ment of years in dif- ferent eras.	Tamil month.	Tamil Month						Lunar Month.	Week-day Month	Day (mean)	New Moon Ending moment of New Moon Tithi. ('s Anom. ☉'s Anom.										Deduct for Narshatras	
		Beginning			End						Mean		Actual									
		Week-day	Month	Day	Week-day	Month	Day				Ghatikas	Palas	Day (actual)	Ghatikas	Palas	Day	Ghatikas	Palas	Day	Ghatikas		Palas
		Month	Day	Last Day	Month	Day	Day				Ghatikas	Palas	Ghatikas	Palas	Ghatikas	Palas	Ghatikas	Palas	Ghatikas	Palas		
K. Y. 4976	Chittirai...	2 Ap	12	31	4 My	12	Vaisakha	...	4 My	5	22 36	...	35 22	26 40 42	23 13 31	1 day, 44 ghat., 14 palas.						
Sak. 1797	Vaikasi ...	5 My	13	31	7 Je	12	Jyesta	...	5 Je	3	54 27	...	53 18	1 5 59	52 45 21							
Vik. 1932	Ani ...	1 Je	13	32	4 Jl	14	Ashada	...	7 Jl	3	26 17	...	10 56	3 4 32	82 17 11							
(S.) Yuva	Adi ...	5 Jl	15	31	7 Au	14	Sravana	...	1 Au	1	58 7	...	30 57	5 3 6	111 49 1							
K. 1050 (S. M.)	Avani ...	1 Au	15	31	3 S	14	Bhadrapada	...	3 Au	31	29 57 30	...	55 57	7 1 39	141 20 52							
K. 1050 (N. M.)	Purattasi .	4 S	15	31	6 O	15	Asvina	...	5 S	30	1 47 29	...	27 50	9 0 13	170 52 42							
2 g, 49 p.	Aippasi ...	7 O	16	30	1 N	14	Kartika	...	6 O	29	33 37	...	7 30	10 58 47	200 24 32							
B. S. 1281	Kartigai ...	2 N	15	29	2 D	13	Margasira	...	1 N	28	5 27 27	...	53 54	12 57 20	229 56 22							
(N.) Sarvajit	Margali ...	3 D	14	30	4 Ja	12	Pausha	...	2 D	27	37 17	...	43 37	14 55 54	259 28 12							
A. D. 1876	Tai ...	5 Ja	13	29	5 F	10	Magha	...	4 Ja	26	9 8	...	31 33	16 54 27	289 0 2							
H. 1293	Masi ...	6 F	11	30	7 Mr	11	Phalguna	...	5 F	24	40 58 25	...	13 24	18 53 1	318 31 52							
Ja. 28	Panguni ...	1 Mr	12	30	2 Ap	10	Chaitra	...	7 Mr	25	12 48	...	47 54	20 51 35	348 3 42							
K. Y. 4977	Chittirai .	3 Ap	11	31	5 My	11	Vaisaka	...	1 Ap	23	44 38 24	...	14 58	22 50 8	12 20 1	0 day, 55 ghat., 21 palas.						
Sak. 1798	Vaikasi ...	6 My	12	32	2 Je	12	Jyesta	...	3 My	23	16 28	...	36 14	24 48 42	41 51 51							
Vik. 1933	Ani ...	3 Je	13	31	5 Jl	13	Ashada	...	4 Je	21	48 18	...	53 52	26 47 15	71 23 41							
(S.) Dhatri	Adi ...	6 Jl	14	32	2 Au	14	Sravana	...	6 Jl	21	20 8	...	10 27	1 12 32	100 55 31							
K. 1051 (S. M.)	Avani ...	3 Au	15	31	5 S	14	Bhadrapada	...	7 Au	19	51 58	...	28 54	3 11 5	130 27 21							
K. 1051 (N. M.)	Purattasi .	6 S	15	30	7 O	14	Asvina	...	2 S	18	23 49 17	...	51 38	5 9 38	159 59 11							
18 g, 20 p.	Aippasi ...	1 O	15	30	2 N	13	Kartika	...	3 O	17	55 39	...	20 42	7 8 11	189 31 2							
B. S. 1282	Kartigai .	3 N	14	30	4 D	13	Margasira	...	5 N	16	27 29 15	...	57 8	9 6 44	219 2 52							
(N.) Sarvadharin.	Margali ...	5 D	14	29	5 Ja	11	Pausha	...	6 D	15	59 19	...	40 57	11 5 17	248 34 42							
A. D. 1877	Tai ...	6 Ja	12	29	6 F	9	Magha	...	1 Ja	14	31 9	...	29 42	13 3 50	278 6 32							
H. 1294	Masi ...	7 F	10	30	1 Mr	11	Phalguna	...	3 F	13	2 59	...	17 25	15 2 23	307 38 22							
Ja. 16	Panguni ...	2 Mr	12	31	4 Ap	11	Chaitra	...	4 Mr	14	34 49 15	...	3 35	17 0 56	337 10 12							
K. Y. 4978	Chittirai .	5 Ap	12	30	6 My	11	Vaisaka	...	6 Ap	13	6 39	...	41 8	18 59 29	1 26 31	0 day, 6 ghat., 28 palas.						
Sak. 1799	Vaikasi ...	7 My	12	32	3 Je	12	Jyesta	...	7 My	12	38 29 13	...	11 1	20 58 2	30 58 21							
Vik. 1934	Ani ...	4 Je	13	31	6 Jl	13	Ashada	...	2 Je	11	10 19	...	34 29	22 56 35	60 30 11							
(S.) Isvara.	Adi ...	7 Jl	14	32	3 Au	14	Sravana	...	3 Jl	10	42 10	...	53 43	24 55 8	90 2 1							
K. 1052 (S. M.)	Avani ...	4 Au	15	31	6 S	14	Bhadrapada	...	5 Au	9	14 0	...	11 24	26 53 42	119 33 51							
K. 1052 (N. M.)	Purattasi .	7 S	15	30	1 O	14	Asvina	...	6 S	7	45 50	...	30 3	1 18 59	149 5 41							
33 g, 51 p.	Aippasi ...	2 O	15	30	3 N	13	Kartika	...	1 O	7	17 40 6	...	51 56	3 17 29	178 37 31							
B. S. 1283	Kartigai ...	4 N	14	30	5 D	13	Margasira	...	2 N	5	49 30	...	18 47	5 16 3	208 9 21							
(N.) Virodhin	Margali ...	6 D	14	29	6 Ja	11	Pausha	...	4 D	5	21 20 4	...	51 56	7 14 36	237 41 11							
A. D. 1878	Tai ...	7 Ja	12	30	1 F	10	Magha	...	5 Ja	3	53 10	...	31 34	9 13 10	267 13 1							
H. 1295	Masi ...	2 F	11	29	2 Mr	11	Phalguna	...	7 F	2	25 0	...	16 24	11 11 44	296 44 51							
Ja. 5	Panguni ...	3 Mr	12	31	5 Ap	11	Chaitra	...	1 Mr	3	56 50 4	...	3 25	13 10 17	326 16 41							
K. Y. 4979	Chittirai...	6 Ap	12	31	1 My	12	Vaisaka	...	3 Ap	2	28 40	...	49 38	15 8 50	355 48 31	1 day, 30 ghat., 8 palas.						
Sak. 1800	Vaikasi ...	2 My	13	31	4 Je	12	Jyesta	...	2 Mr	2	0 31	...	28 38	17 7 24	20 4 51							
Vik. 1935	Ani ...	5 Je	13	32	1 Jl	14	Ashada	...	6 My	31	32 21	...	Je. 1. 1 53	19 5 58	49 36 41							
(S.) Bahudhanya.	Adi ...	2 Jl	15	31	4 Au	14	Sravana	...	1 Je	30	4 11	...	28 53	21 4 32	79 8 31							
K. 1053 (S. M.)	Avani ...	5 Au	15	31	7 S	14	Bhadrapada	...	2 Jl	29	36 1	...	51 34	23 3 5	108 40 21							
K. 1053 (N. M.)	Purattasi .	1 S	15	31	3 O	15	Asvina	...	4 Au	28	7 51	...	12 14	25 1 39	138 12 11							
49 g, 22 p.	Aippasi ...	4 O	16	30	5 N	14	Kartika	...	5 S	26	39 41	...	32 55	27 0 12	167 44 1							
B. S. 1284	Kartigai ...	6 N	15	29	6 D	13	Margasira	...	7 O	26	11 32 25	...	55 21	1 25 30	197 15 51							
(N.) Vikrita	Margali ...	7 D	14	29	7 Ja	11	Pausha	...	1 N	24	43 22	...	21 10	3 24 3	226 47 42							
A. D. 1879	Tai ...	1 Ja	12	30	2 F	10	Magha	...	3 D	24	15 12 23	...	51 22	5 22 37	256 19 32							
H. 1297	Masi ...	3 F	11	30	4 Mr	12	Phalguna	...	4 Ja	22	47 2	...	27 23	7 21 10	285 51 22							
Dec. 15	Panguni ...	5 Mr	13	30	6 Ap	11	Chaitra	...	6 F	21	18 52	...	5 34	9 19 44	315 23 12							
K. Y. 4980	Chittirai...	7 Ap	12	31	2 My	12	Vaisakha	...	7 Mr	22	50 42	...	47 28	11 18 18	344 55 2	0 day, 41 ghat., 14 palas.						
Sak. 1801	Vaikasi ...	3 My	13	31	5 Je	12	Jyesta	...	2 Ap	21	22 32	...	30 25	13 16 51	9 11 21							
Vik. 1936	Ani ...	6 Je	13	32	2 Jl	14	Ashada	...	3 My	20	54 22 21	...	11 5	15 15 25	38 43 11							
(S.) Pramathi	Adi ...	3 Jl	15	31	5 Au	14	Sravana	...	5 Je	19	26 13	...	47 19	17 13 58	68 15 1							
K. 1054 (S. M.)	Avani ...	6 Au	15	32	2 S	15	Bhadrapada	...	6 Jl	18	58 3 19	...	18 54	19 12 32	97 46 51							
K. 1054 (N. M.)	Purattasi...	3 S	16	30	4 O	15	Asvina	...	1 Au	17	29 53	...	46 35	21 11 6	127 18 41							
4 g, 54 p.	Aippasi ...	5 O	16	30	6 N	14	Kartika	...	3 S	16	1 43	...	11 55	23 9 39	156 50 31							
B. S. 1285	Kartigai ...	7 N	15	29	7 D	13	Margasira	...	4 O	15	33 33	...	36 9	25 8 13	186 22 21							
(N.) Khara	Margali ...	1 D	14	30	2 Ja	12	Pausha	...	6 N	14	5 23	...	0 39	27 6 46	215 54 12							
A. D. 1880	Tai ...	3 Ja	13	29	3 F	10	Magha	...	7 D	13	37 13	...	26 24	1 32 3	245 26 2							
H. 1298	Masi ...	4 F	11	30	5 Mr	11	Phalguna	...	2 Ja	12	9 3 11	...	54 22	3 30 37	274 57 52							
Dec. 4.	Panguni ...	6 Mr	12	30	7 Ap	10	Chaitra	...	3 F	10	40 53	...	24 50	5 29 11	304 29 42							
									5 Mr	11	12 44 10	...	58 5	7 27 44	334 1 32							
									6 Ap	9	44 34	...	34 9	9 26 18	363 33 22							

TABLE XII.—General Ephemeris A.D. 1880—A.D. 1885.

Commence- ment of years in dif- ferent eras.		Tamil month.	Tamil Month						Lunar month.	Week-day Month	Day (mean)	New Moon Ending moment of New Moon Tithi ('s Anom. ☉'s Anom.						Deduct for Nakshatras	Deduct for Yogas.
			Beginning			End						Mean		Actual					
			Week-day	Month	Day	Last Day	Week-day	Month				Day	Ghatikas	Palas	Ghatikas	Palas			
			Month	Day	Day	Month	Day	Month				Day	Day	Ghatikas	Palas	Day	Ghatikas			Palas	Day	Ghatikas	Palas
K. Y. 4981	Chittirai ...	1 Ap	11	31	3 My	11	Vaisakha ...	1 My	9	16 24 ...	11 47	11 24 53	27 49 41	2 days, 4 ghat., 54 palas.	2 days, 4 ghat., 54 palas.	2 days, 4 ghat., 54 palas.			
Sak. 1802	Vaikasi ...	4 My	12	32	7 Je	12	Jyeshtha ...	2 Je	7	48 14 ...	50 28	13 23 27	57 21 31						
Vik. 1937	Ani ...	1 Je	13	31	3 Jl	13	Ashada ...	4 Jl	7	20 4 ...	28 25	15 22 0	86 53 21						
(S.) Vikrama	Adi ...	4 Jl	14	32	7 Au	14	Sravana ...	5 Au	5	51 54 6	4 25	17 20 34	116 25 11						
K. 1055 (S. M.)	Avani ...	1 Au	15	31	3 S	14	Bhadrapada ...	7 S	4	23 44 ...	38 4	19 19 8	145 57 1						
K. 1055 (N. M.)	Purattasi ...	4 S	15	30	5 O	14	Asvina ...	1 O	3	55 34 4	9 16	21 17 41	175 28 51						
20 g., 25 p.	Aippasi ...	6 O	15	30	7 N	13	Kartika ...	3 N	2	27 25 ...	38 28	23 16 15	205 0 41						
B. S. 1286	Kartigai ...	1 N	14	30	2 D	13	Margasira ...	4 D	1	59 15 20	6 9	25 14 48	234 32 32						
(N.) Nandana	Margali ...	3 D	14	29	3 Ja	11	Pausha ...	6 D	31	31 5 ...	32 59	27 13 22	264 4 22						
A. D. 1881	Tai ...	4 Ja	12	29	4 F	9	Magha ...	1 Ja	30	2 55 29	59 27	1 38 39	293 36 12						
H. 1299	Masi ...	5 F	10	30	6 Mr	11	Phalguna ...	2 F	28	34 45 ...	26 10	3 37 13	323 8 2						
Nov. 23	Panguni ...	7 Mr	12	31	2 Ap	11	Chaitra ...	4 Mr	30	6 35 29	53 50	5 35 46	352 39 52						
K. Y. 4982	Chittirai...	3 Ap	12	31	5 My	12	Vaisakha ...	5 Ap	28	38 25 ...	23 39	7 34 20	16 56 11	1 day, 16 ghat., 0 palas.	1 day, 16 ghat., 0 palas.	1 day, 16 ghat., 0 palas.			
Sak. 1803	Vaikasi ...	6 My	13	31	1 Je	12	Jyeshtha ...	7 My	28	10 15 27	55 6	9 32 54	46 28 1						
Vik. 1938	Ani ...	2 Je	13	32	5 Jl	14	Ashada ...	1 Je	26	42 16 ...	29 58	11 31 27	75 59 51						
(S.) Vrisha	Adi ...	6 Jl	15	31	1 Au	14	Sravana ...	3 Jl	26	13 56 ...	7 0	13 30 1	105 31 41						
K. 1056 (S. M.)	Avani ...	2 Au	15	31	4 S	14	Bhadrapada ...	4 Au	24	45 46 ...	46 33	15 28 34	135 3 31						
K. 1056 (N. M.)	Purattasi ...	6 S	15	30	6 O	14	Asvina ...	6 S	23	17 36 ...	25 55	17 27 8	164 35 21						
35 g., 56 p.	Aippasi ...	7 O	15	30	1 N	13	Kartika ...	7 O	22	49 26 23	3 38	19 25 42	194 7 11						
B. S. 1287	Kartigai ...	2 N	14	30	3 D	13	Margasira ...	2 N	21	21 16 ...	38 40	21 24 15	223 39 1						
(N.) Vijaya	Margali ...	4 D	14	29	4 Ja	11	Pausha ...	3 D	20	53 6 21	11 14	23 22 49	253 10 52						
A. D. 1882	Tai ...	5 Ja	12	30	6 F	10	Magha ...	5 Ja	19	24 56 ...	39 22	25 21 22	282 42 42						
H. 1300	Masi ...	7 F	11	30	1 Mr	12	Phalguna ...	6 F	17	56 46 18	5 17	27 19 56	312 14 32						
Nov. 12	Panguni ...	2 Mr	13	30	3 Ap	11	Chaitra ...	1 Mr	19	28 36 ...	29 14	1 45 13	341 46 22						
K. Y. 4983	Chittirai...	4 Ap	12	31	6 My	12	Vaisakha ...	3 Ap	18	0 27 17	52 27	3 43 47	6 2 41	0 day, 27 ghat., 8 palas.	0 day, 27 ghat., 8 palas.	0 day, 27 ghat., 8 palas.			
Sak. 1804	Vaikasi ...	7 My	13	31	2 Je	12	Jyeshtha ...	4 My	17	32 17 ...	16 16	5 42 20	35 34 31						
Vik. 1939	Ani ...	3 Je	13	32	6 Jl	14	Ashada ...	6 Je	16	4 7 15	42 18	7 40 54	65 6 21						
(S.) Chitrabhamu.	Adi ...	7 Jl	15	31	2 Au	14	Sravana ...	7 Jl	15	35 57 ...	12 2	9 39 27	94 38 11						
K. 1057 (S. M.)	Avani ...	3 Au	15	31	5 S	14	Bhadrapada ...	2 Au	14	7 47 13	47 6	11 38 1	124 10 1						
K. 1057 (N. M.)	Purattasi ...	6 S	15	31	1 O	15	Asvina ...	3 S	12	39 37 ...	27 18	13 36 35	153 41 51						
51 g., 27 p.	Aippasi ...	2 O	16	30	3 N	14	Kartika ...	5 O	12	11 27 ...	10 50	15 35 8	133 13 41						
B. S. 1288	Kartigai ...	4 N	15	29	4 D	13	Margasira ...	6 N	10	43 17 ...	54 33	17 33 42	212 45 31						
(N.) Jaya	Margali ...	5 D	14	30	6 Ja	12	Pausha ...	1 D	10	15 8 ...	35 42	19 32 15	242 17 21						
A. D. 1883	Tai ...	7 Ja	13	29	7 F	10	Magha ...	2 Ja	8	46 58 9	12 24	21 30 48	271 49 11						
H. 1301	Masi ...	1 F	11	30	2 Mr	12	Phalguna ...	4 F	7	18 48 ...	43 50	23 29 22	301 21 2						
Nov. 2	Panguni ...	3 Mr	13	30	4 Ap	11	Chaitra ...	5 Mr	8	50 38 9	10 18	25 27 56	330 52 52						
K. Y. 4984	Chittirai ...	5 Ap	12	31	7 My	12	Vaisakha ...	1 My	6	54 18 ...	53 54	1 51 47	24 41 1	1 day, 50 ghat., 47 palas.	1 day, 50 ghat., 47 palas.	1 day, 50 ghat., 47 palas.			
Sak. 1805	Vaikasi ...	1 My	13	31	3 Je	12	Jyeshtha ...	3 Je	5	26 8 ...	12 33	3 50 20	54 12 51						
Vik. 1940	Ani ...	4 Je	13	32	7 Jl	14	Ashada ...	4 Jl	4	57 59 ...	33 49	5 48 53	83 44 41						
(S.) Subhamu	Adi ...	1 Jl	15	32	4 Au	15	Sravana ...	6 Au	3	29 49 2	59 20	7 47 28	113 16 31						
K. 1058 (S. M.)	Avani ...	5 Au	16	31	7 S	15	Bhadrapada ...	1 S	2	1 39 1	30 59	9 46 1	142 48 21						
K. 1058 (N. M.)	Purattasi ...	1 S	16	30	2 O	15	Asvina ...	2 O	1	33 29 ...	9 45	11 44 35	172 20 11						
6 g., 59 p.	Aippasi ...	3 O	16	30	4 N	14	Kartika ...	4 O	31	5 19 30	54 37	13 43 8	201 52 1						
B. S. 1289	Kartigai ...	5 N	15	29	5 D	13	Margasira ...	5 N	29	37 9 ...	41 29	15 41 42	231 23 51						
(N.) Manmatha.	Margali ...	6 D	14	30	7 Ja	12	Pausha ...	7 D	29	8 59 ...	28 54	17 40 16	260 55 42						
A. D. 1884	Tai ...	1 Ja	13	29	1 F	10	Magha ...	1 Ja	27	40 49 28	10 21	19 38 49	290 27 32						
H. 1302	Masi ...	2 F	11	30	3 Mr	11	Phalguna ...	3 F	26	12 39 ...	45 2	21 37 23	319 59 22						
Oct. 21.	Panguni ...	4 Mr	12	30	5 Ap	10	Chaitra ...	4 Mr	26	44 29 27	12 58	23 35 56	349 31 12						
K. Y. 4985	Chittirai...	6 Ap	11	31	1 My	11	Vaisakha ...	6 Ap	25	16 20 ...	35 24	25 34 30	13 47 31	1 day, 1 ghat., 54 palas.	1 day, 1 ghat., 54 palas.	1 day, 1 ghat., 54 palas.			
Sak. 1806	Vaikasi ...	2 My	12	32	5 Je	12	Jyeshtha ...	7 My	24	48 10 ...	54 6	27 33 4	43 19 21						
Vik. 1941	Ani ...	6 Je	13	31	1 Jl	13	Ashada ...	2 Je	23	20 0 ...	11 19	1 58 21	72 51 11						
(S.) Tarana	Adi ...	2 Jl	14	32	5 Au	14	Sravana ...	3 Jl	22	51 50 ...	28 39	3 56 54	102 23 1						
K. 1059 (S. M.)	Avani ...	6 Au	15	31	1 S	14	Bhadrapada ...	5 Au	21	23 40 20	51 53	5 55 28	131 54 51						
K. 1059 (N. M.)	Purattasi ...	2 S	15	30	3 O	14	Asvina ...	6 S	19	55 30 ...	20 17	7 54 1	161 26 41						
22 g., 30 p.	Aippasi ...	4 O	15	30	5 N	13	Kartika ...	1 O	19	27 20 18	56 51	9 52 35	190 58 31						
B. S. 1290	Kartigai ...	6 N	14	30	7 D	13	Margasira ...	2 N	17	59 10 ...	39 56	11 51 9	220 30 21						
(N.) Durmukha.	Margali ...	1 D	14	29	1 Ja	11	Pausha ...	4 D	17	31 0 ...	28 38	13 49 42	250 2 11						
A. D. 1885	Tai ...	2 Ja	12	29	2 F	9	Magha ...	6 Ja	16	2 51 ...	18 14	15 48 16	279 34 1						
H. 1303	Masi ...	3 F	10	30	4 Mr	11	Phalguna ...	7 F	14	34 41 15	4 42	17 46 49	309 5 52						
Oct. 10	Panguni ...	5 Mr	12	31	7 Ap	11	Chaitra ...	2 Mr	16	6 31 ...	41 32	19 45 23	338 37 42						

TABLE XII.—General Ephemeris A.D. 1885—A.D. 1890.

Commence- ment of years in dif- ferent eras.	Tamil month.	Tamil Month						Lunar month.	New Moon												Deduct for Nakshatras
		Beginning			End				Ending moment of New Moon Tithi.						('s Anom. ☉'s Anom.						
		Week-day			Week-day				Mean						Actual						
		Month	Day	Last Day	Month	Day	Month		Day (mean)	Ghatikas	Palas	Day (actual)	Ghatikas	Palas	Day	Ghatikas	Palas	Day	Ghatikas	Palas	
K. Y. 4986	Chittirai ...	1 Ap	12	31	3 My	12	Vaisakha ...	3 Ap	14	38 21 15	12 35	21 43 57	2 54 1								
Sak. 1807	Vaikasi ...	4 My	13	31	6 Je	12	Jyeshtha ...	5 My	14	10 11 ...	35 45	23 42 30	32 25 51								
Vik. 1942	Ani ...	7 Je	13	32	3 Ji	14	Ashada ...	6 Je	12	42 1 ...	54 42	25 41 4	61 57 41								
(S.) Parthiva	Adi ...	4 Ji	15	31	6 Au	14	Sravana ...	1 Ji	12	13 51 ...	11 26	0 6 21	91 29 31								
K. 1060 (S. M.)	Avani ...	7 Au	15	31	2 S	14	Bhadrapada ...	2 Au	10	45 41 ...	28 46	2 4 54	121 1 21								
K. 1060 (N. M.)	Purattasi ...	3 S	15	31	5 O	15	Asvina ...	4 S	9	17 32 80	49 20	4 3 28	150 33 11								
38 g., 1 p.	Aippasi ...	6 O	16	29	6 N	13	Kartika ...	5 O	8	49 22 ...	15 13	6 2 2	180 5 1								
B. S. 1291	Kartigai ...	7 N	14	30	1 D	13	Margasira ...	7 N	7	21 12 6	48 2	8 0 35	209 36 51								
(N.) Hemalamba.	Margali ...	2 D	14	29	2 Ja	11	Pausha ...	1 D	6	53 2 ...	28 24	9 59 9	239 8 41								
A. D. 1886	Tai ...	3 Ja	12	30	4 F	10	Magha ...	3 Ja	5	24 52 ...	15 5	11 57 42	268 40 31								
H. 1304	Masi ...	5 F	11	30	6 Mr	12	Phalguna ...	4 F	3	56 42 4	4 29	13 56 16	298 12 22								
Sep. 30	Panguni ...	7 Mr	13	30	1 Ap	11	Chaitra ...	6 Mr	5	28 32 ...	51 38	15 54 50	327 44 12								
K. Y. 4987	Chittirai...	2 Ap	12	31	4 My	12	Vaisakha ...	2 My	3	32 13 4	6 4	19 51 51	21 32 21								
Sak. 1808	Vaikasi ...	5 My	13	31	7 Je	12	Jyeshtha ...	4 Je	2	4 3 ...	32 28	21 59 30	51 4 11								
Vik. 1943	Ani ...	1 Je	13	32	4 Ji	14	Ashada ...	5 Ji	1	35 53 ...	53 37	23 49 4	80 36 1								
(S.) Vyasa	Adi ...	5 Ji	15	32	7 Au	14	Sravana ...	7 Ji	31	7 43 ...	11 53	25 47 38	110 7 51								
K. 1061 (S. M.)	Avani ...	1 Au	15	31	3 S	14	Bhadrapada ...	1 Au	29	39 33 ...	30 13	0 12 55	139 39 41								
K. 1061 (N. M.)	Purattasi ...	4 S	15	31	6 O	15	Asvina ...	3 S	28	11 23 27	50 29	2 11 28	169 11 31								
53 g., 32 p.	Aippasi ...	7 O	16	30	1 N	14	Kartika ...	4 O	27	43 13 ...	14 58	4 10 2	198 43 21								
B. S. 1292	Kartigai...	2 N	15	29	2 D	13	Margasira ...	6 N	26	15 3 25	45 5	6 8 36	228 15 11								
(N.) Vilamba	Margali ...	3 D	14	30	4 Ja	12	Pausha ...	7 D	25	46 53 ...	21 21	8 7 9	257 47 1								
A. D. 1887	Tai ...	5 Ja	13	29	5 F	10	Magha ...	2 Ja	24	18 44 ...	3 46	10 5 43	287 18 51								
H. 1305	Masi ...	6 F	11	30	7 Mr	12	Phalguna ...	3 F	22	50 34 ...	49 39	12 4 16	316 50 41								
Sep. 19	Panguni...	1 Mr	13	30	2 Ap	11	Chaitra ...	5 Mr	24	22 24 ...	35 46	14 2 50	346 22 31								
K. Y. 4988	Chittirai...	3 Ap	12	31	5 My	12	Vaisakha ...	6 Ap	22	54 14 23	18 18	16 1 24	10 38 51								
Sak. 1809	Vaikasi ...	6 My	13	32	1 Je	12	Jyeshtha ...	1 My	22	26 4 ...	54 44	17 59 57	40 10 41								
Vik. 1944	Ani ...	2 Je	13	31	5 Ji	14	Ashada ...	2 Je	20	57 54 21	24 40	19 58 31	69 42 31								
(S.) Sarvajit	Adi ...	6 Ji	15	32	2 Au	15	Sravana ...	4 Ji	20	29 44 ...	49 31	21 57 4	99 14 21								
K. 1062 (S. M.)	Avani ...	3 Au	16	31	5 S	15	Bhadrapada ...	6 Au	19	1 34 ...	11 20	23 55 37	128 46 11								
K. 1062 (N. M.)	Purattasi ...	6 S	16	30	7 O	15	Asvina ...	7 S	17	33 25 ...	32 19	25 54 12	158 18 1								
9 g., 4 p.	Aippasi ...	1 O	16	30	2 N	14	Kartika ...	2 O	17	5 15 16	54 8	0 19 29	187 49 51								
B. S. 1293	Kartigai...	3 N	15	29	3 D	13	Margasira ...	3 N	15	37 5 ...	18 25	2 18 2	217 21 41								
(N.) Vikarin	Margali ...	4 D	14	30	5 Ja	12	Pausha ...	5 D	15	8 55 14	46 30	4 16 36	246 53 31								
A. D. 1888	Tai ...	6 Ja	13	29	6 F	10	Magha ...	6 Ja	13	40 45 ...	19 0	6 15 9	276 25 21								
H. 1306	Masi ...	7 F	11	30	1 Mr	11	Phalguna ...	1 F	12	12 35 11	55 45	8 13 43	305 57 11								
Sep. 7	Panguni ...	2 Mr	12	30	3 Ap	10	Chaitra ...	2 Mr	12	44 25 ...	36 1	10 12 17	335 29 2								
K. Y. 4989	Chittirai...	4 Ap	11	31	6 My	11	Vaisakha ...	4 Ap	11	16 15 ...	18 7	12 10 50	365 0 52								
Sak. 1810	Vaikasi ...	7 My	12	32	3 Je	12	Jyeshtha ...	5 My	10	48 5 ...	59 37	14 9 24	29 17 11								
Vik. 1945	Ani ...	4 Je	13	31	6 Ji	13	Ashada ...	7 Je	9	19 55 ...	38 29	16 7 57	58 49 1								
(S.) Sarvadhari.	Adi ...	7 Ji	14	32	3 Au	14	Sravana ...	1 Ji	8	51 46 90	11 58	18 6 31	88 20 51								
K. 1063 (S. M.)	Avani ...	4 Au	15	31	6 S	14	Bhadrapada ...	3 Au	7	23 36 ...	41 51	20 5 5	117 52 41								
K. 1063 (N. M.)	Purattasi ...	7 S	15	30	1 O	14	Asvina ...	4 S	5	55 26 6	8 56	22 3 38	147 24 31								
24 g., 35 p.	Aippasi ...	2 O	15	30	3 N	13	Kartika ...	6 O	5	27 16 ...	34 7	24 2 12	176 56 21								
B. S. 1294	Kartigai...	4 N	14	30	5 D	13	Margasira ...	7 N	3	59 6 ...	58 52	26 0 45	206 28 11								
(N.) Sarvari	Margali ...	6 D	14	29	6 Ja	11	Pausha ...	2 D	3	30 56 ...	24 13	0 26 2	236 0 1								
A. D. 1889	Tai ...	7 Ja	12	30	1 F	10	Magha ...	4 Ja	2	2 46 10	50 11	2 24 36	265 31 51								
H. 1307	Masi ...	2 F	11	29	2 Mr	11	Phalguna ...	5 Ja	31	34 37 ...	20 3	4 23 10	295 3 41								
Aug. 28.	Panguni...	3 Mr	12	31	5 Ap	11	Chaitra ...	7 Mr	2	6 27 1	51 20	6 21 43	324 35 31								
K. Y. 4990	Chittirai...	6 Ap	12	31	1 My	12	Vaisakha ...	1 Mr	31	38 17 ...	25 10	8 20 17	354 7 21								
Sak. 1811	Vaikasi ...	2 My	13	31	4 Je	12	Jyeshtha ...	3 Ap	30	10 7 ...	1 23	10 18 50	18 23 41								
Vik. 1946	Ani ...	5 Je	13	32	1 Ji	14	Ashada ...	4 My	29	41 57 ...	39 13	12 17 24	47 55 31								
(S.) Virodhi	Adi ...	2 Ji	15	31	4 Au	14	Sravana ...	6 Je	28	13 47 00	17 29	14 15 58	77 27 21								
K. 1064 (S. M.)	Avani ...	5 Au	15	31	7 S	14	Bhadrapada ...	7 Ji	27	45 37 ...	54 47	16 14 31	106 59 11								
K. 1064 (N. M.)	Purattasi ...	1 S	15	31	3 O	15	Asvina ...	2 Au	26	17 27 ...	30 14	18 13 4	136 31 1								
40 g., 6 p.	Aippasi ...	4 O	16	29	4 N	13	Kartika ...	3 S	24	49 17 25	3 23	20 11 38	166 2 51								
B. S. 1295	Kartigai...	5 N	14	30	6 D	13	Margasira ...	5 O	24	21 8 ...	34 18	22 10 12	195 34 1								
(N.) Plava	Margali ...	7 D	14	29	7 Ja	11	Pausha ...	6 N	22	52 58 23	3 13	24 8 46	225 6 31								
A. D. 1890	Tai ...	1 Ja	12	30	2 F	10	Magha ...	1 D	22	24 48 ...	31 20	26 7 19	254 38 21								
H. 1308	Masi ...	3 F	11	30	4 Mr	12	Phalguna ...	2 Ja	20	56 38 ...	57 17	0 32 36	284 10 11								
Aug. 17.	Panguni ...	5 Mr	13	30	6 Ap	11	Chaitra ...	4 F	19	28 28 ...	23 25	2 31 10	313 42 1								

TABLE XII.—General Ephemeris A.D. 1890—A.D. 1895.

Tamil Month										New Moon										Ending moment of New Moon Tithi.		('s Anom.) 's Anom.			
		Beginning			End																				
Commence- ment of years in dif- ferent eras.	Tamil month.	Week-day	Month	Day	Last Day	Week-day	Month	Day	Lunar month.	Week-day	Month	Day (mean)	Ghatikas	Palas	Day (actual)	Ghatikas	Palas	Day	Ghatikas	Palas	Day	Ghatikas	Palas	Deduct for Nakshatras	Deduct for Yogas.
K. Y. 4991	Chittirai	7	Ap	12	31	2	My	12	Vaisakha	7	Ap	19	32	8	17	45	6	28	13	7	30	10			
Sak. 1812	Vaikasi	3	My	13	31	5	Je	12	Jyeshtha	2	My	19	3	58	18	47	33	8	26	46	37	2	0		
Vik. 1947	Ani	6	Je	13	32	2	Jl	14	Ashada	3	Je	17	35	48	20	13	10	25	19	66	33	50			
(S.) Vikrita	Adi	3	Jl	15	31	5	Au	14	Sravana	5	Jl	17	7	39	16	56	4	12	23	53	96	5	41		
K. 1065 (S. M.)	Avani	6	Au	15	31	1	S	14	Bhadrapada	6	Au	15	39	29	34	53	14	22	26	125	37	31			
										1	S	14	11	19	14	52	16	21	0	155	9	21			
K. 1065 (N. M.)	Purattasi	2	S	15	31	4	O	15	Asvina	2	O	13	43	9	54	33	18	19	31	184	41	11			
55 g., 37 p.	Aippasi	5	O	16	30	6	N	14	Kartika	4	N	12	14	59	31	45	20	18	7	214	13	1			
B. S. 1296	Kartigai	7	N	15	29	7	D	13	Margasira	5	D	11	46	49	5	48	22	16	41	243	44	51			
(N.) Subhakrit	Margali	1	D	14	30	2	Ja	12	Pausha	7	Ja	10	18	39	36	22	24	15	14	273	16	41			
A. D. 1891	Tai	3	Ja	13	29	3	F	10	Magha	1	F	8	50	29	3	34	26	13	48	302	48	31			
H. 1809	Masi	4	F	11	30	5	Mr	12	Phalguna	3	Mr	10	22	20	28	1	0	39	5	332	20	21			
Aug. 7	Panguni	6	Mr	13	30	7	Ap	11	Chaitra	4	Ap	8	54	10	50	52	2	37	39	361	52	11			
																							0 day, 33 ghat., 40 palas.		
K. Y. 4992	Chittirai	1	Ap	12	31	3	My	12	Vaisakha	6	My	8	26	0	13	39	4	36	12	26	8	30			
Sak. 1813	Vaikasi	4	My	13	32	7	Je	13	Jyeshtha	7	Je	6	57	50	37	45	6	34	46	55	40	20			
Vik. 1948	Ani	1	Je	14	31	3	Jl	14	Ashada	2	Jl	6	29	40	5	1	8	33	19	85	12	10			
(S.) Khara	Adi	4	Jl	15	32	7	Au	15	Sravana	4	Au	5	1	30	4	37	11	10	31	53	114	44	0		
K. 1066 (S. M.)	Avani	1	Au	16	31	3	S	15	Bhadrapada	5	S	3	33	20	15	4	12	30	27	144	15	50			
K. 1066 (N. M.)	Purattasi	4	S	16	30	5	O	15	Asvina	7	O	3	5	10	2	57	46	14	29	0	173	47	40		
11 g., 9 p.	Aippasi	6	O	16	30	7	N	14	Kartika	1	N	1	37	1	42	27	16	27	34	203	19	30			
B. S. 1297	Kartigai	1	N	15	29	1	D	13	Margasira	3	D	1	8	51	25	50	18	26	7	232	51	21			
(N.) Sobhana	Margali	2	D	14	30	3	Ja	12	Pausha	4	D	30	40	41	31	5	18	20	24	41	262	23	11		
A. D. 1892	Tai	4	Ja	13	29	4	F	10	Magha	6	Ja	29	12	31	39	36	22	23	15	291	55	1			
H. 1310	Masi	5	F	11	30	6	Mr	11	Phalguna	7	F	27	44	21	28	8	17	24	21	48	321	26	51		
July 26	Panguni	7	Mr	12	30	1	Ap	10	Chaitra	2	Mr	28	16	11	32	15	26	20	22	350	58	41			
																							1 day, 57 ghat., 20 palas.		
K. Y. 4993	Chittirai	2	Ap	11	31	4	My	11	Vaisakha	3	Ap	26	48	1	52	53	0	45	29	15	15	0			
Sak. 1814	Vaikasi	5	My	12	32	1	Je	12	Jyeshtha	5	My	26	19	51	11	44	2	44	12	44	46	50			
Vik. 1949	Ani	2	Je	13	31	4	Jl	13	Ashada	6	Je	24	51	41	31	52	4	42	46	74	18	40			
(S.) Nandana	Adi	5	Jl	14	32	1	Au	14	Sravana	1	Jl	24	23	31	23	54	45	6	41	20	103	50	30		
K. 1067 (S. M.)	Avani	2	Au	15	31	4	S	14	Bhadrapada	2	Au	22	55	21	23	3	8	39	53	133	22	20			
K. 1067 (N. M.)	Purattasi	5	S	15	30	6	O	14	Asvina	4	S	21	27	12	20	58	28	10	38	27	162	54	10		
26 g., 40 p.	Aippasi	7	O	15	30	1	N	13	Kartika	5	O	20	59	2	40	51	12	37	0	192	26	0			
B. S. 1298	Kartigai	2	N	14	30	3	D	13	Margasira	7	N	19	30	52	27	4	14	35	34	221	57	50			
(N.) Krodhin	Margali	4	D	14	29	4	Ja	11	Pausha	2	D	19	2	42	16	14	16	34	8	251	29	41			
A. D. 1893	Tai	5	Ja	12	30	6	F	10	Magha	3	Ja	17	34	32	18	0	25	18	32	41	281	1	31		
H. 1311	Masi	7	F	11	29	7	Mr	11	Phalguna	5	F	16	6	23	38	57	20	31	15	310	33	21			
July 15	Panguni	1	Mr	12	31	3	Ap	11	Chaitra	6	Mr	17	38	13	18	10	1	22	29	48	340	5	11		
																							1 day, 8 ghat., 27 palas.		
K. Y. 4994	Chittirai	4	Ap	12	31	6	My	12	Vaisakha	1	Ap	16	10	3	34	41	24	28	22	4	21	30			
Sak. 1815	Vaikasi	7	My	13	31	2	Je	12	Jyeshtha	2	My	15	41	53	54	43	26	26	56	33	53	20			
Vik. 1950	Ani	3	Je	13	32	6	Jl	14	Ashada	4	Je	14	13	43	12	5	0	52	13	63	25	10			
										5	Jl	13	45	33	29	21	2	50	46	92	57	0			
(S.) Vijaya	Adi	7	Jl	15	31	2	Au	14	Sravana	7	Au	12	17	23	11	49	21	4	49	20	122	28	50		
K. 1068 (S. M.)	Avani	3	Au	15	31	5	S	14	Bhadrapada	1	S	10	49	13	14	34	6	47	54	152	0	40			
K. 1068 (N. M.)	Purattasi	6	S	15	31	1	O	15	Asvina	3	O	10	21	3	9	46	49	8	46	27	181	32	30		
42 g., 11 p.	Aippasi	2	O	16	29	2	N	13	Kartika	4	N	8	52	53	26	54	10	45	1	211	4	20			
B. S. 1299	Kartigai	3	N	14	30	4	D	13	Margasira	6	D	8	24	44	13	42	12	43	34	240	36	10			
(N.) Visvavasu	Margali	5	D	14	29	5	Ja	11	Pausha	7	Ja	6	56	34	7	3	43	14	42	8	270	8	1		
A. D. 1894	Tai	6	Ja	12	30	7	F	10	Magha	2	F	5	28	24	51	38	16	40	42	299	39	51			
H. 1312	Masi	1	F	11	30	2	Mr	12	Phalguna	4	Mr	7	0	14	33	24	18	39	15	329	11	41			
July 5	Panguni	3	Mr	13	30	4	Ap	11	Chaitra	5	Ap	5	32	4	6	7	23	20	37	49	358	43	31		
																							0 day, 19 ghat., 14 palas.		
K. Y. 4995	Chittirai	5	Ap	12	31	7	My	12	Vaisakha	7	My	5	3	54	34	3	22	36	22	22	59	50			
Sak. 1816	Vaikasi	1	My	13	31	3	Je	12	Jyeshtha	1	Je	3	35	44	54	59	24	34	56	52	31	40			
Vik. 1951	Ani	4	Je	13	32	7	Jl	14	Ashada	3	Jl	3	7	34	12	31	26	33	30	82	3	30			
(S.) Jaya	Adi	4	Jl	15	31	3	Au	14	Sravana	4	Au	1	39	24	29	17	0	58	47	111	35	20			
K. 1069 (S. M.)	Avani	4	Au	15	31	6	S	14	Bhadrapada	6	Au	31	11	14	30	48	5	2	57	20	141	7	10		
K. 1069 (N. M.)	Purattasi	7	S	15	31	2	O	15	Asvina	7	S	29	43	4	11	23	4	55	54	170	39	0			
57 g., 42 p.	Aippasi	3	O	16	30	4	N	14	Kartika	2	O	29	14	55	28	40	47	6	54	27	200	10	50		
B. S. 1300	Kartigai	5	N	15	29	5	D	13	Margasira	3	N	27	46	45	17	33	8	53	1	229	42	40			
(N.) Parabhava	Margali	6	D	14	30	7	Ja	12	Pausha	5	D	27	18	35	1	2	10	51	35	259	14	30			
A. D. 1895	Tai	1	Ja	13	29	1	F	10	Magha	6	Ja	25	50	25	49	49	12	50	8	288	46	21			
H. 1313	Masi	2	F	11	30	3	Mr	12	Phalguna	1	F	24	22	15	38	15	14	48	42	318	18	11			
June 24	Panguni	4	Mr	13	30	5	Ap	11	Chaitra	2	Mr	25	54	5	26	22	16	47	15	347	50	1			
																							1 day, 43 ghat., 12 palas.		

TABLE XII.—General Ephemeris A.D. 1895—A.D. 1900.

		Tamil Month						New Moon															
		Beginning			End			Ending moment of New Moon Tithi.												C's Anom. O's Anom.			
								Mean Actual															
Commence- ment of years in dif- ferent eras.	Tamil month.	Week-day	Month	Day	Week-day	Month	Day	Lunar month.	Week-day	Month	Day (mean)	Ghatikas	Palas	Day (actual)	Ghatikas	Palas	Day	Ghatikas	Palas	Day	Ghatikas	Palas	Deduct for Nakshatras
K. Y. 4996 Sak. 1817 Vik. 1952 (S.) Manmatha. K. 1070 (S. M.) K. 1070 (N. M.) 13 g., 14 p. B. S. 1301 (N.) Plavanga. A. D. 1898 H. 1314 June 12	Chittirai...	6	Ap	12	31	1	My	12	Vaisakha ...	4	Ap	24	25 55 ...	59 27	18 45 49	12 6 20							0 day, 54 ghat., 20 palas.
	Vaikasi ...	2	My	13	32	5	Je	13	Jyeshtha ...	5	My	23	57 45 24	29 4	20 44 23	41 38 10							
	Ani ...	6	Je	14	31	1	Ji	14	Ashada ...	7	Je	22	29 36 ...	52 36	22 42 56	71 10 0							
	Adi ...	2	Ji	15	32	5	Au	15	Sravana ...	2	Ji	22	1 26 ...	12 8	24 41 30	100 41 50							
	Avani ...	6	Au	16	31	1	S	15	Bhadrapada ...	3	Au	20	33 16 ...	80 29	26 40 3	130 13 40							
	Purattasi ...	2	S	16	30	3	O	15	Asvina ...	5	S	19	5 6 18	49 51	1 5 20	159 45 30							
	Aippasi ...	4	O	16	30	5	N	14	Kartika ...	6	O	18	36 56 ...	12 27	3 3 54	189 17 20							
	Kartigai ...	6	N	15	30	7	D	14	Margasira ...	1	N	17	8 46 16	39 48	5 2 28	218 49 10							
	Margali ...	1	D	15	29	1	Ja	12	Pausha ...	2	D	16	40 37 ...	13 8	7 1 1	248 21 0							
	Tai ...	2	Ja	13	29	2	F	10	Magha ...	4	Ja	15	12 27 14	52 22	8 59 35	277 52 51							
K. Y. 4997 Sak. 1818 Vik. 1953 (S.) Durmukha K. 1071 (S. M.) K. 1071 (N. M.) 28 g., 45 p. B. S. 1302 (N.) Kilaka A. D. 1897 H. 1315 June 2	Chittirai...	7	Ap	11	31	2	My	11	Vaisakha ...	1	Ap	12	47 57 13	6 31	14 55 16	1 12 50						0 day, 5 ghat., 27 palas.	
	Vaikasi ...	3	My	12	32	6	Je	12	Jyeshtha ...	3	My	12	19 47 ...	45 51	16 53 49	30 44 40							
	Ani ...	7	Je	13	31	2	Ji	13	Ashada ...	6	Ji	10	23 27 ...	46 21	20 50 56	89 48 20							
	Adi ...	3	Ji	14	32	6	Au	14	Sravana ...	7	Au	8	55 17 9	9 53	22 49 30	119 20 10							
	Avani ...	7	Au	15	31	2	S	14	Bhadrapada ...	2	S	7	27 7 ...	31 35	24 48 4	148 52 0							
	Purattasi ...	3	S	15	30	4	O	14	Asvina ...	3	O	6	58 57 ...	53 18	26 46 37	178 23 50							
	Aippasi ...	5	O	15	30	6	N	13	Kartika ...	5	N	5	30 48 ...	16 35	1 11 54	207 55 40							
	Kartigai ...	7	N	14	30	1	D	13	Margasira ...	7	D	5	2 38 4	42 14	3 10 28	237 27 30							
	Margali ...	2	D	14	29	2	Ja	11	Pausha ...	1	Ja	3	34 28 ...	13 3	5 9 1	266 59 20							
	Tai ...	3	Ja	12	30	4	F	10	Magha ...	3	F	2	6 18 1	47 22	7 7 35	296 31 11							
K. Y. 4998 Sak. 1819 Vik. 1954 (S.) Hemalamba. K. 1072 (S. M.) K. 1072 (N. M.) 44 g., 16 p. B. S. 1303 (N.) Saumya A. D. 1898 H. 1316 May 22	Chittirai...	2	Ap	12	31	4	My	12	Vaisakha ...	7	My	1	41 48 ...	46 56	13 3 16	19 51 10						1 day, 29 ghat., 6 palas.	
	Vaikasi ...	5	My	13	31	7	Je	12	Jyeshtha ...	2	My	31	13 38 ...	27 23	15 1 48	49 23 0							
	Ani ...	1	Je	13	32	4	Ji	14	Ashada ...	3	Je	29	45 29 30	3 39	17 0 22	78 54 50							
	Adi ...	5	Ji	15	31	7	Au	14	Sravana ...	5	Ji	29	17 19 ...	35 54	18 58 55	108 26 40							
	Avani ...	1	Au	15	31	3	S	14	Bhadrapada ...	6	Au	27	49 9 28	4 0	20 57 29	137 58 30							
	Purattasi ...	4	S	15	31	6	O	15	Asvina ...	1	S	26	20 59 ...	31 29	22 56 2	167 30 20							
	Aippasi ...	7	O	16	30	1	N	14	Kartika ...	2	O	25	52 49 ...	56 59	24 54 36	197 2 10							
	Kartigai ...	2	N	15	29	2	D	13	Margasira ...	4	N	24	24 39 ...	22 20	26 53 10	226 34 0							
	Margali ...	3	D	14	29	3	Ja	11	Pausha ...	5	D	23	56 29 ...	48 30	1 18 27	256 5 50							
	Tai ...	4	Ja	12	30	5	F	10	Magha ...	7	Ja	22	28 19 ...	16 14	3 17 0	285 37 40							
K. Y. 4999 Sak. 1820 Vik. 1955 (S.) Vilamba K. 1073 (S. M.) K. 1073 (N. M.) 59 g., 47 p. B. S. 1304 (N.) Sadharana A. D. 1899 H. 1317 May 12	Chittirai...	3	Ap	12	31	5	My	12	Vaisakha ...	5	Ap	21	3 50 20	50 2	9 12 41	8 57 40						0 day, 40 ghat., 13 palas.	
	Vaikasi ...	6	My	13	31	1	Je	12	Jyeshtha ...	6	My	20	35 40 ...	28 27	11 11 15	38 29 30							
	Ani ...	2	Je	13	32	5	Ji	14	Ashada ...	1	Je	19	7 30 ...	6 13	13 9 48	68 1 20							
	Adi ...	6	Ji	15	31	1	Au	14	Sravana ...	2	Ji	18	39 20 ...	44 14	15 8 22	97 33 10							
	Avani ...	2	Au	15	31	4	S	14	Bhadrapada ...	4	Au	17	11 10 ...	21 11	17 6 55	127 5 0							
	Purattasi ...	5	S	15	31	7	O	15	Asvina ...	5	S	15	43 0 ...	56 16	19 5 29	156 36 50							
	Aippasi ...	1	O	16	30	2	N	14	Kartika ...	1	N	13	46 40 ...	59 32	23 2 36	215 40 30							
	Kartigai ...	3	N	15	29	3	D	13	Margasira ...	3	D	13	18 31 ...	28 7	25 1 10	245 12 20							
	Margali ...	4	D	14	30	5	Ja	12	Pausha ...	4	Ja	11	50 21 ...	55 15	26 59 43	274 44 10							
	Tai ...	6	Ja	13	29	6	F	10	Magha ...	6	F	10	22 11 ...	21 18	1 25 0	304 16 1							
K. Y. 5000. Sak. 1821 Vik. 1956 (S.) Vikari K. 1074 (S. M.) K. 1074 (N. M.) 15 g., 19 p. B. S. 1305 (N.) Virodhakrit. A. D. 1900 H. 1318 May 1	Chittirai...	4	Ap	12	31	6	My	12	Vaisakha ...	3	My	9	57 41 ...	41 11	7 20 41	27 36 0						2 days, 3 ghat., 52 palas.	
	Vaikasi ...	7	My	13	32	3	Je	13	Jyeshtha ...	5	Je	8	29 31 ...	11 54	9 19 15	57 7 50							
	Ani ...	4	Je	14	31	6	Ji	14	Ashada ...	7	Ji	8	1 21 7	45 42	11 17 48	86 39 40							
	Adi ...	7	Ji	15	32	3	Au	15	Sravana ...	1	Au	6	33 12 ...	23 11	13 16 22	116 11 30							
	Avani ...	4	Au	16	31	6	S	15	Bhadrapada ...	3	S	5	5 2 ...	3 24	15 14 56	145 43 20							
	Purattasi ...	7	S	16	30	1	O	15	Asvina ...	4	O	4	36 52 ...	44 13	17 13 29	175 15 10							
	Aippasi ...	2	O	16	30	3	N	14	Kartika ...	6	N	3	8 42 ...	23 28	19 12 3	204 47 0							
	Kartigai ...	4	N	15	30	5	D	14	Margasira ...	7	D	2	40 32 ...	59 47	21 10 36	234 18 50							
	Margali ...	6	D	15	29	6	Ja	12	Pausha ...	2	Ja	1	12 22 ...	32 27	23 9 10	263 50 40							
	Tai ...	7	Ja	13	29	7	F	10	Magha ...	3	Ja	30	44 12 31	1 20	25 7 44	293 22 30							

TABLE XII.—General Ephemeris A.D. 1900—A.D. 1905.

Commence- ment of years in dif- ferent eras.	Tamil month.	Tamil Month						Lunar month.	New Moon Ending moment of New Moon Tithi. ☾'s Anom. ☉'s Anom.												Deduct for Nakshatras	Deduct for Yogas.			
		Beginning			End				Mean						Actual										
		Week-day	Month	Day	Last Day	Week-day	Month		Day	Week-day	Month	Day (mean)	Ghatikas	Palas	Day (actual)	Ghatikas	Palas	Day	Ghatikas	Palas			Day	Ghatikas	Palas
K. Y. 5001	Chittirai...	6	Ap	13	30	7	My	12	Vaisakha ...	1	Ap	29	19 43	...	11 53	3 30	8	16 42	29	1 day, 14 ghat., 59 palas.	2	32			
Sak. 1822	Vaikasi ...	1	My	13	32	4	Je	13	Jyeshtha ...	2	My	28	51 33	●	34 30	5 28	42	46 14	19						
Vik. 1957	Ani ...	5	Je	14	31	7	Jl	14	Ashada ...	4	Je	27	23 23	26	59 31	7 27	15	75 46	9						
(S.) Sarvari	Adi ...	1	Jl	15	32	4	Au	15	Sravana ...	5	Jl	26	55 13	...	28 45	9 25	49	105 18	0						
K. 1075 (S. M.)	Avani ...	5	Au	16	31	7	S	15	Bhadrapada .	7	Au	25	27 3	...	3 49	11 24	22	134 49	50						
K. 1075 (N. M.)	Purattasi .	1	S	16	30	2	O	15	Asvina ...	1	S	23	58 53	...	44 43	13 22	56	164 21	40						
30 g., 50 p.	Aippasi ...	3	O	16	30	4	N	14	Kartika ...	3	O	23	30 43	...	31 30	15 21	30	193 53	30						
B. S. 1306	Kartigai...	5	N	15	30	6	D	14	Margasira ...	5	N	22	2 33	...	14 26	17 20	3	223 25	20						
(N.) Paridhavin.	Margali ...	7	D	15	29	7	Ja	12	Pausha ...	6	D	21	34 24	...	56 39	19 18	37	252 57	10						
A. D. 1901	Tai ...	1	Ja	13	30	2	F	11	Magha ...	1	Ja	20	6 14	...	33 54	21 17	10	282 29	0						
H. 1319	Masi ...	3	F	12	29	3	Mr	12	Phalguna ...	2	F	18	38 4	19	5 16	23 15	44	312 0	50						
Ap. 20	Panguni...	4	Mr	13	31	6	Ap	12	Chaitra ...	4	Mr	20	9 54	...	31 13	25 14	18	341 32	40						
K. Y. 5002	Chittirai...	7	Ap	13	31	2	My	13	Vaisakha ...	5	Ap	18	41 44	...	52 54	27 12	51	5 48	59	0 day, 26 ghat., 6 palas.	0	35			
Sak. 1823	Vaikasi ...	3	My	14	31	5	Je	13	Jyeshtha ...	7	My	18	13 34	...	12 7	1 38	8	35 20	49						
Vik. 1958	Ani ...	6	Je	14	32	2	Jl	15	Ashada ...	1	Je	16	45 24	...	29 5	3 36	42	64 52	39						
(S.) Plava.	Adi ...	3	Jl	16	31	5	Au	15	Sravana ...	3	Jl	16	17 14	15	51 40	5 35	15	94 24	29						
										4	Au	14	49 5	...	16 58	7 33	49	123 56	19						
K. 1076 (S. M.)	Avani ...	6	Au	16	31	1	S	15	Bhadrapada .	6	S	13	20 55	12	48 47	9 32	23	153 28	9						
K. 1076 (N. M.)	Purattasi .	2	S	16	31	4	O	16	Asvina ...	7	O	12	52 45	...	28 4	11 30	56	183 0	0						
16 g., 21 p.	Aippasi ...	5	O	17	30	6	N	15	Kartika ...	2	N	11	24 35	...	13 38	13 29	30	212 31	50						
B. S. 1307.	Kartigai...	7	N	16	29	7	D	14	Margasira .	3	D	10	56 25	11	2 24	15 28	3	242 3	40						
(N.) Pramadin	Margali ...	1	D	15	29	1	Ja	12	Pausha ...	5	Ja	9	28 15	...	49 17	17 26	37	271 35	30						
A. D. 1902	Tai ...	2	Ja	13	30	3	F	11	Magha ...	7	F	8	0 5	...	31 6	19 25	11	301 7	20						
H. 1320	Masi ...	4	F	12	30	5	Mr	13	Phalguna ...	1	Mr	9	31 55	10	5 34	21 23	44	330 39	10						
Ap. 10.	Panguni ...	6	Mr	14	30	7	Ap	12	Chaitra ...	3	Ap	8	3 45	...	33 3	23 22	18	360 11	0						
K. Y. 5003	Chittirai ...	1	Ap	13	31	3	My	13	Vaisakha ...	4	My	7	35 36	...	54 54	25 20	51	24 27	19	1 day, 19 ghat., 46 palas.	3	14			
Sak. 1824	Vaikasi ...	4	My	14	31	6	Je	13	Jyeshtha ...	6	Je	6	7 26	...	13 1	27 19	25	53 59	9						
Vik. 1959.	Ani ...	7	Je	14	32	3	Jl	15	Ashada ...	7	Jl	5	39 16	...	29 48	1 44	42	83 30	59						
(S.) Subhakrit	Adi ...	4	Jl	16	31	6	Au	15	Sravana ...	2	Au	4	11 6	3	48 8	3 43	16	113 2	50						
K. 1077 (S. M.)	Avani ...	7	Au	16	31	2	S	15	Bhadrapada .	3	S	2	42 56	...	10 31	5 41	49	142 34	40						
K. 1077 (N. M.)	Purattasi .	3	S	16	31	5	O	16	Asvina ...	5	O	2	14 46	1	39 18	7 40	23	172 6	30						
1 g., 52 p.	Aippasi ...	6	O	17	30	7	N	15	Kartika ...	6	O	31	45 36	...	16 38	9 38	56	201 38	20						
B. S. 1308	Kartigai ...	1	N	16	29	1	D	14	Margasira ...	1	N	30	18 26	29	59 33	11 37	30	231 10	10						
(N.) Ananda	Margali ...	2	D	15	30	3	Ja	13	Pausha ...	2	D	29	50 16	...	48 38	13 36	4	260 42	0						
A. D. 1903	Tai ...	4	Ja	14	29	4	F	11	Magha ...	4	Ja	28	22 7	...	38 15	15 34	37	290 13	50						
H. 1321	Masi ...	5	F	12	30	6	Mr	13	Phalguna ...	5	F	26	53 57	27	23 18	17 33	11	319 45	40						
Mr. 30	Panguni...	7	Mr	14	30	1	Ap	12	Chaitra ...	7	Mr	28	25 47	29	1 2	19 31	44	349 17	30						
K. Y. 5004	Chittirai...	2	Ap	13	31	4	My	13	Vaisakha ...	1	Ap	26	57 37	27	31 3	21 30	18	13 33	49	1 day, 0 ghat., 53 palas.	1	17			
Sak. 1825	Vaikasi ...	5	My	14	32	1	Je	14	Jyeshtha ...	3	My	26	29 27	...	54 27	23 28	52	43 5	39						
Vik. 1960	Ani ...	2	Je	15	31	4	Jl	15	Ashada ...	5	Je	25	1 17	...	13 17	25 27	25	72 37	29						
(S.) Sobhakrit	Adi ...	5	Jl	16	32	1	Au	16	Sravana ...	6	Jl	24	33 7	...	30 9	27 25	59	102 9	19						
K. 1078 (S. M.)	Avani ...	2	Au	17	31	4	S	16	Bhadrapada .	1	Au	23	4 57	22	47 52	1 51	16	131 41	9						
K. 1078 (N. M.)	Purattasi .	5	S	17	30	6	O	16	Asvina ...	2	S	21	36 48	...	8 56	3 49	49	161 12	59						
17 g., 24 p.	Aippasi ...	7	O	17	30	1	N	15	Kartika ...	4	O	21	8 38	20	35 17	5 48	23	190 44	50						
B. S. 1309	Kartigai...	2	N	16	30	3	D	15	Margasira ...	5	N	19	40 28	...	8 30	7 46	57	220 16	40						
(N.) Rakshasa	Margali ...	4	D	16	29	4	Ja	13	Pausha ...	7	D	19	12 18	18	48 54	9 45	30	249 48	30						
A. D. 1904	Tai ...	5	Ja	14	29	5	F	11	Magha ...	1	Ja	17	44 8	...	35 13	11 44	4	279 20	20						
H. 1322	Masi ...	6	F	12	30	7	Mr	12	Phalguna ...	3	F	16	15 58	...	23 59	13 42	37	308 52	10						
Mr. 18	Panguni...	1	Mr	13	31	3	Ap	12	Chaitra ...	4	Mr	16	47 48	17	10 28	15 41	11	338 24	0						
K. Y. 5005	Chittirai...	4	Ap	13	30	5	My	12	Vaisakha ...	6	Ap	15	19 38	...	50 57	17 39	45	2 40	19	0 day, 12 ghat., 0 palas.	0	22			
Sak. 1826	Vaikasi ...	6	My	13	32	2	Je	13	Jyeshtha ...	7	My	14	51 28	15	24 6	19 38	18	32 12	9						
										2	Je	13	23 19	...	50 25	21 36	52	61 43	59						
Vik. 1961	Ani ...</																								

TABLE XII.—General Ephemeris A.D. 1905—A.D. 1910.

Commence- ment of years in dif- ferent eras.		Tamil month.	Tamil Month						Lunar Month.	Week-day Month Day	New Moon										Deduct for Nakshatras	
			Beginning			End					Ending moment of New Moon Tithi. ('s Anom. ☉'s Anom.)											
			Week-day Month Day	Last Day	Week-day Month Day	Mean		Actual			Ghatikas Palas		Day (actual)		Ghatikas Palas		Day		Ghatikas Palas			
K. Y. 5006	Chittirai...	5 Ap	13	31	7 My	13	Vaisakha ...	5	My	4	13	30	...	37	5	15	47	45	21	18	39	1 day, 35 ghat., 39 palas.
Sak. 1827	Vaikasi ...	1 My	14	31	3 Je	13	Jyeshtha ...	6	Je	2	45	20	3	11	37	17	46	18	50	50	29	
Vik. 1962	Ani ...	4 Je	14	32	7 Jl	15	Ashada ...	1	Jl	2	17	10	...	41	50	19	44	52	80	22	19	
(S.) Visavasu	Adi ...	1 Jl	16	31	3 Au	15	Sravana ...	2	Jl	31	49	0	Au. 1	7	28	21	43	26	109	54	9	
K. 1080 (S.M.)	Avani ...	4 Au	16	31	6 S	15	Bhadrapada ...	4	Au	30	20	50	...	30	22	23	41	59	139	25	59	
K. 1080 (N.M.)	Purattasi ...	7 S	16	31	2 O	16	Asvina ...	5	S	28	52	40	...	52	27	25	40	33	168	57	49	
40 g., 26 p.	Aippasi ...	3 O	17	30	4 N	15	Kartika ...	7	O	28	24	31	...	14	...	0	5	50	198	29	39	
B. S. 1311	Kartigai ...	5 N	16	29	5 D	14	Margasira ...	1	N	26	56	21	...	40	11	2	4	24	228	1	29	
(N.) Pingala	Margali ...	6 D	15	29	6 Ja	12	Pausha ...	3	D	26	28	11	...	8	24	4	2	57	257	33	20	
A. D. 1906	Tai ...	7 Ja	13	30	1 F	11	Magha ...	5	Ja	25	0	1	24	40	22	6	1	31	287	5	10	
H. 1324	Masi ...	2 F	12	30	3 Mr	13	Phalguna ...	6	F	23	31	51	...	16	3	8	0	4	316	36	59	
Feb. 25	Panguni ...	4 Mr	14	30	5 Ap	12	Chaitra ...	1	Mr	25	3	41	24	54	53	9	58	38	346	8	49	
K. Y. 5007	Chittirai...	6 Ap	13	31	1 My	13	Vaisakha ...	2	Ap	23	35	31	...	35	31	11	57	12	10	25	8	0 day, 46 ghat., 46 palas.
Sak. 1828	Vaikasi ...	2 My	14	31	4 Je	13	Jyeshtha ...	4	My	23	7	21	...	14	55	13	55	45	39	56	59	
Vik. 1963	Ani ...	5 Je	14	32	1 Jl	15	Ashada ...	5	Je	21	39	12	...	54	3	15	54	19	69	28	49	
(S.) Parabhava	Adi ...	2 Jl	16	31	4 Au	15	Sravana ...	7	Jl	21	11	2	...	28	30	17	52	52	99	0	39	
K. 1081 (S.M.)	Avani ...	5 Au	16	32	1 S	16	Bhadrapada ...	1	Au	19	42	52	...	59	34	19	51	26	128	32	29	
K. 1081 (N.M.)	Purattasi ...	2 S	17	30	3 O	16	Asvina ...	3	S	18	14	42	...	27	57	21	50	0	158	4	19	
3 g., 58 p.	Aippasi ...	4 O	17	30	5 N	15	Kartika ...	4	O	17	46	32	...	54	33	23	48	33	187	36	9	
B. S. 1312	Kartigai ...	6 N	16	29	6 D	14	Margastra ...	6	N	16	18	22	...	20	23	25	47	7	217	7	59	
(N.) Kalayukta	Margali ...	7 D	15	30	1 Ja	13	Pausha ...	7	D	15	50	12	...	46	19	0	12	24	246	39	49	
A. D. 1907	Tai ...	2 Ja	14	29	2 F	11	Magha ...	2	Ja	14	22	2	...	13	13	2	10	57	276	11	39	
H. 1325	Masi ...	3 F	12	30	4 Mr	13	Phalguna ...	3	F	12	53	52	...	41	30	4	9	31	305	43	29	
Feb. 14	Panguni...	5 Mr	14	30	6 Ap	12	Chaitra ...	5	Mr	14	25	43	...	11	37	6	8	5	335	15	19	
								6	Ap	12	57	33	...	43	55	8	6	38	364	47	10	
K. Y. 5008	Chittirai..	7 Ap	13	31	2 My	13	Vaisakha ...	1	My	12	29	23	...	18	35	10	5	12	29	3	29	2 days, 10 ghat., 25 palas.
Sak. 1829	Vaikasi ...	3 My	14	32	6 Je	14	Jyeshtha ...	3	Je	11	1	13	10	55	14	12	3	45	58	35	19	
Vik. 1964	Ani ...	7 Je	15	31	2 Jl	15	Ashada ...	4	Jl	10	33	3	...	33	7	14	2	19	88	7	9	
(S.) Plavanga	Adi ...	3 Jl	16	32	6 Au	16	Sravana ...	6	Au	9	4	53	...	11	2	16	0	53	117	38	59	
K. 1082 (S.M.)	Avani ...	7 Au	17	31	2 S	16	Bhadrapada ...	7	S	7	36	43	...	47	49	17	59	26	147	10	49	
K. 1082 (N.M.)	Purattasi ...	3 S	17	30	4 O	16	Asvina ...	2	O	7	8	34	...	22	34	19	58	0	176	42	39	
19 g., 29 p.	Aippasi ...	5 O	17	30	6 N	15	Kartika ...	3	N	5	40	24	...	54	54	21	56	33	206	14	29	
B. S. 1313	Kartigai...	7 N	16	30	1 D	15	Margasira ...	5	D	5	12	14	...	24	54	23	55	7	235	46	19	
(N.) Siddhantini	Margali ...	2 D	16	29	2 Ja	13	Pausha ...	6	Ja	3	44	4	...	53	36	25	53	40	265	18	9	
A. D. 1908	Tai ...	3 Ja	14	29	3 F	11	Magha ...	1	F	2	15	54	...	19	22	0	18	58	294	49	59	
H. 1326	Masi ...	4 F	12	30	5 Mr	12	Phalguna ...	2	Mr	2	47	44	...	44	47	2	17	31	324	21	50	
Feb. 4	Panguni ...	6 Mr	13	31	1 Ap	12	Chaitra ...	4	Ap	1	19	34	...	10	9	4	16	5	353	53	40	
K. Y. 5009	Chittirai...	2 Ap	13	31	4 My	13	Vaisakha ...	5	Ap	30	51	24	...	36	8	6	14	38	18	9	59	1 day, 21 ghat., 32 palas.
Sak. 1830	Vaikasi ...	5 My	14	31	7 Je	13	Jyeshtha ...	7	My	30	23	14	...	4	55	8	13	12	47	41	49	
Vik. 1965	Ani ...	1 Je	14	32	4 Jl	15	Ashada ...	1	Je	28	55	4	...	36	30	10	11	46	77	13	39	
(S.) Kilaka	Adi ...	5 Jl	16	31	7 Au	15	Sravana ...	3	Jl	28	26	55	...	12	3	12	10	19	106	45	29	
K. 1083 (S.M.)	Avani ...	1 Au	16	31	3 S	15	Bhadrapada ...	4	Au	26	58	45	...	51	21	14	8	53	136	17	19	
K. 1083 (N.M.)	Purattasi ...	4 S	16	30	5 O	15	Asvina ...	6	S	25	30	35	...	32	46	16	7	26	165	49	9	
50 g., 31 p.	Aippasi ...	6 O	16	30	7 N	14	Kartika ...	1	O	25	2	25	...	13	46	18	6	0	195	20	59	
B. S. 1314	Kartigai ...	1 N	15	30	2 D	14	Margasira ...	2	N	23	34	15	...	52	21	20	4	34	224	52	49	
(N.) Raudra	Margali ...	3 D	15	29	3 Ja	12	Pausha ...	4	D	23	6	5	...	27	26	22	3	7	254	24	39	
A. D. 1909	Tai ...	4 Ja	13	30	5 F	11	Magha ...	5	Ja	21	37	55	...	58	20	24	1	41	283	56	29	
H. 1327	Masi ...	6 F	12	30	7 Mr	13	Phalguna ...	7	F	20	9	45	...	25	11	26	0	14	313	28	20	
Ja. 23	Panguni...	1 Mr	14	30	2 Ap	12	Chaitra ...	1	Mr	21	41	36	...	48	57	0	25	31	343	0	10	
K. Y. 5010	Chittirai...	3 Ap	13	31	5 My	13	Vaisakha ...	3	Ap	20	13	26	...	10	48	2	24	5	7	16	29	0 day, 32 ghat., 39 palas.
Sak. 1831	Vaikasi ...	6 My	14	31	1 Je	13	Jyeshtha ...	4	My	19	45	16	...	32	18	4	22	39	36	48	19	
Vik. 1966	Ani ...	2 Je	14	32	5 Jl	15	Ashada ...	6	Je	18	17	6	17	55	23	6	21	12	66	20	9	
(S.) Saumya	Adi ...	6 Jl	16	31	1 Au	15	Sravana ...	7	Jl	17	48	56	...	21	55	8	19	45	95	51	59	
								2	Au	16	20	46	15	53	57	10	18	19	125	23	49	
K. 1084 (S.M.)	Avani ...	2 Au	16	31	4 S	15	Bhadrapada ...	3	S	14	52	36	...	32	6	12	16	53	154	55	39	
K. 1084 (N.M.)	Purattasi ...	5 S	16	31	7 O	16	Asvina ...	5	O	14	24	26	...	15	54	14	15	27	184	27	29	
35 g., 0 p.	Aippasi ...	1 O	17	30	2 N	15	Kartika ...	6	N	12	56	17	13	1	50	16	14	0	213	59	19	
B. S. 1315	Kartigai ...	3 N	16	29	3 D	14	Margasira ...	1	D	12	28	7	...	46	22	18	12	34	243	31	9	
(N.) Durmati	Margali ...	4 D	15	29	4 Ja	12	Pausha ...	3	Ja	11	0	0	...	25	37	20	11	7	273	2	59	
A. D. 1910	Tai ...	5 Ja	13	30	6 F	11	Magha ...	4	F	9	31	47	10	1	12	22	9	41	302	34	50	
H. 1328	Masi ...	7 F	12	30	1 Mr	13	Phalguna ...	6	Mr	11	3	37	...	29	19	24	8	15	332	6	40	
Ja. 13	Panguni...	2 Mr	14	30	3 Ap	12	Chaitra ...	7	Ap	9	35	27	...	52	37	26	6	48	361	38	30	

TABLE XII.—General Ephemeris A.D. 1910—A.D. 1915.

Commence- ment of years in dif- ferent eras.	Tamil month.	Tamil Month						Lunar month.	Week-day Month	New Moon										Deduct for Nakshatras	Deduct for Yogas.	
		Beginning			End					of New Moon Tithi.												
		Week-day	Month	Day	Last Day	Week-day	Month			Day	Mean		Actual		Day	Gharikas	Palas	Day	Gharikas			Palas
											Gharikas	Palas	Gharikas	Palas								
K. Y. 5011	Chittirai...	4 Ap	13	31	6 My	13	Vaisakha ...	2 My	9	7	17	...	12	24	0	32	6	25	54	48	1 day, 56 ghat., 18 palas.	25
Sak. 1832	Vaikasi ...	7 My	14	31	2 Je	13	Jyeshtha ...	3 Je	7	39	7	...	30	45	2	30	40	55	26	38		
Vik. 1967	Ani ...	3 Je	14	32	6 Ji	15	Ashada ...	5 Ji	7	10	57	6	49	55	4	29	13	84	58	29		
(S.)Sadharana.	Adi ...	7 Ji	16	32	3 Au	16	Sravana ...	6 Au	5	42	47	...	12	30	6	27	47	114	30	19		
K. 1085 (S.M.)	Avani ...	4 Au	17	31	6 S	16	Bhadrapada.	1 S	4	14	38	3	40	56	8	26	20	144	2	9		
K. 1085 (N. M)	Purattasi .	7 S	17	30	1 O	16	Asvina ...	2 O	3	46	28	...	16	42	10	24	54	173	33	59		
6 g., 3 p.	Aippasi ...	2 O	17	30	3 N	15	Kartika ...	4 N	2	18	18	1	59	42	12	23	28	203	5	49		
B. S. 1316	Kartigai .	4 N	16	29	4 D	14	Margasira .	5 D	1	50	8	...	47	48	14	22	1	232	37	39		
(N.) Dundubhi	Margali ...	5 D	15	30	6 Ja	13	Pausha ...	7 D	31	21	58	...	36	35	16	20	35	262	9	29		
A.D. 1911	Tai ...	7 Ja	14	29	7 F	11	Magha ...	1 Ja	29	53	48	30	21	25	18	19	8	291	41	19		
H. 1329. Ja. 2	Masi ...	1 F	12	30	2 Mr	13	Phalguna ...	3 F	28	25	38	...	59	27	20	17	41	321	13	9		
H. 1330. D. 22	Panguni ...	3 Mr	14	30	4 Ap	12	Chaitra ...	4 Mr	29	57	29	30	30	8	22	16	16	350	45	0		
K. Y. 5012	Chittirai...	5 Ap	13	31	7 My	13	Vaisakha ...	6 Ap	28	29	19	...	54	20	24	14	49	15	1	18	1 day, 7 ghat., 25 palas.	27
Sak. 1833	Vaikasi ...	1 My	14	32	4 Je	14	Jyeshtha ...	1 My	28	1	9	...	13	46	26	13	23	44	33	8		
Vik. 1968	Ani ...	5 Je	15	31	7 Ji	15	Ashada ...	2 Je	26	32	59	...	30	43	0	38	40	74	4	59		
(S.) Virodhakrit.	Adi ...	1 Ji	16	32	4 Au	16	Sravana ...	4 Ji	26	4	49	25	47	44	2	37	13	103	36	49		
K. 1086 (S.M.)	Avani ...	5 Au	17	31	7 S	16	Bhadrapada.	5 Au	24	36	39	...	8	4	4	35	47	133	8	39		
K. 1086 (N.M.)	Purattasi .	1 S	17	30	2 O	16	Asvina ...	7 S	23	8	29	22	33	35	6	34	21	162	40	29		
21 g., 34 p.	Aippasi ...	3 O	17	30	4 N	15	Kartika ...	1 O	22	40	19	...	6	13	8	32	54	192	12	19		
B. S. 1317	Kartigai...	5 N	16	30	6 D	15	Margasira ...	3 N	21	12	9	20	46	41	10	31	28	221	44	9		
(N.)Rudhiroddgarin	Margali ...	7 D	16	29	7 Ja	13	Pausha ...	4 D	20	44	0	...	33	38	12	30	1	251	15	59		
A. D. 1912	Tai ...	1 Ja	14	29	1 F	11	Magha ...	6 Ja	19	15	50	...	23	46	14	28	35	280	47	49		
H. 1331	Masi ...	2 F	12	30	3 Mr	12	Phalguna ...	7 F	17	47	40	18	11	26	16	27	9	310	19	39		
Dec. 11	Panguni .	4 Mr	13	31	6 Ap	12	Chaitra ...	2 Mr	18	19	30	...	52	52	18	25	41	339	51	30		
K. Y. 5013	Chittirai...	7 Ap	13	31	2 My	13	Vaisakha ...	3 Ap	16	51	20	17	26	26	20	24	16	4	7	48	0 day, 18 ghat., 32 palas.	30
Sak. 1834	Vaikasi ...	3 My	14	31	5 Je	13	Jyeshtha ...	5 My	16	23	10	...	52	47	22	22	49	33	39	38		
Vik. 1969	Ani ...	6 Je	14	31	1 Ji	14	Ashada ...	6 Je	14	55	0	15	13	34	24	21	22	63	11	28		
(S.)Paridhavi.	Adi ...	2 Ji	15	32	5 Au	15	Sravana ...	1 Ji	14	26	50	...	30	21	26	19	57	92	43	18		
K. 1087 (S.M.)	Avani ...	6 Au	16	31	1 S	15	Bhadrapada.	2 Au	12	58	40	...	48	15	0	45	14	122	15	9		
K. 1087 (N.M.)	Purattasi .	2 S	16	31	4 O	16	Asvina ...	4 S	11	30	31	...	7	41	2	43	46	151	46	59		
37 g., 5 p.	Aippasi ...	5 O	17	29	5 N	14	Kartika ...	6 O	11	2	21	10	31	26	4	42	21	181	18	49		
B. S. 1318	Kartigai .	6 N	15	30	7 D	14	Margasira ...	7 N	9	34	11	...	1	16	6	40	54	210	50	39		
(N.) Raktaksha	Margali ...	1 D	15	29	1 Ja	12	Pausha ...	2 D	9	6	1	8	38	10	8	39	27	240	22	29		
A. D. 1913	Tai ...	2 Ja	13	30	3 F	11	Magha ...	3 Ja	7	37	51	...	21	44	10	38	1	269	54	19		
H. 1332	Masi ...	4 F	12	30	5 Mr	13	Phalguna ...	5 F	6	9	41	...	9	26	12	36	35	299	26	9		
Nov. 30	Panguni...	6 Mr	14	30	7 Ap	12	Chaitra ...	6 Mr	7	41	31	...	57	14	14	35	9	328	57	59		
K. Y. 5014	Chittirai .	1 Ap	13	32	3 My	13	Vaisakha ...	1 Ap	6	13	21	...	40	42	16	33	43	358	29	50		
Sak. 1835	Vaikasi ...	4 My	14	31	6 Je	13	Jyeshtha ...	2 My	5	45	12	6	17	22	18	32	16	22	46	8	1 day, 42 ghat., 11 palas.	9
Vik. 1970	Ani ...	7 Je	14	32	3 Ji	15	Ashada ...	4 Je	4	17	2	...	46	50	20	30	50	52	17	58		
(S.) Pramadi	Adi ...	4 Ji	16	31	6 Au	15	Sravana ...	5 Ji	3	48	52	4	10	32	22	29	23	81	49	48		
K. 1088 (S.M.)	Avani ...	4 Au	16	31	2 S	15	Bhadrapada.	7 Au	2	20	42	...	30	42	24	27	57	111	21	39		
K. 1088 (N.M.)	Purattasi .	3 S	16	30	4 O	15	Asvina ...	1 Au	31	52	32	...	49	51	26	26	30	140	53	29		
52 g., 37 p.	Aippasi ...	5 O	16	31	7 N	15	Kartika ...	3 S	30	24	22	...	10	6	0	51	48	170	25	19		
B. S. 1319	Kartigai ...	1 N	16	29	1 D	14	Margasira ...	4 O	29	56	12	...	33	22	2	50	21	199	57	9		
(N.) Krodhana	Margali ...	2 D	15	30	3 Ja	13	Pausha ...	6 N	28	28	2	...	1	10	4	48	55	229	28	59		
A. D. 1914.	Tai ...	4 Ja	14	29	4 F	11	Magha ...	1 D	28	0	0	27	34	26	6	47	28	259	0	49		
H. 1333	Masi ...	5 F	12	31	6 Mr	13	Phalguna ...	2 Ja	26	31	43	...	13	5	8	46	2	288	32	39		
Nov. 19.	Panguni...	7 Mr	14	30	1 Ap	12	Chaitra ...	4 F	25	3	33	24	55	55	10	44	35	318	4	29		
K. Y. 5015.	Chittirai .	2 Ap	13	31	4 My	13	Vaisakha ...	5 Mr	26	35	23	...	40	32	12	43	9	347	36	20		
Sak. 1836	Vaikasi ...	5 My	14	31	7 Je	13	Jyeshtha ...	1 Ap	6	13	21	...	40	42	16	33	43	358	29	50		
Vik. 1971	Ani ...	1 Je	14	32	4 Ji	15	Ashada ...	2 My	5	45	12	6	17	22	18	32	16	22	46	8	0 day, 53 ghat., 18 palas.	11
(S.) Ananda	Adi ...	5 Ji	16	32	1 Au	16	Sravana ...	4 Je	4	17	2	...	46	50	20	30	50	52	17	58		
K. 1089 (S. M.)	Avani ...	2 Au	17	31	4 S	16	Bhadrapada.	5 Ji	3	48	52	4	10	32	22	29	23	81	49	48		
K. 1089 (N. M.)	Purattasi .	5 S	17	30	6 O	16	Asvina ...	7 Au	2	20	42	...	30	42	24	27	57	111	21	39		
8 g., 8 p.	Aippasi ...	7 O	17	30	1 N	15	Kartika ...	1 Au	31	52	32	...	49	51	26	26	30	140	53	29		
B. S. 1320	Kartigai ...	2 N	16	29	2 D	14	Margasira ...	3 S	30	24	22	...	10	6	0	51	48	170	25	19		
(N.) Kshaya	Margali ...	3 D	15	30	4 Ja	13	Pausha ...	4 O	29	56	12	...	33	22	2	50	21	199	57	9		
A. D. 1915	Tai ...	5 Ja	14	29	5 F	11	Magha ...	6 N	28	28	2	...	1	10	4	48	55	229	28	59		
H. 1334	Masi ...	6 F	12	30	7 Mr	13	Phalguna ...	1 D	28	0	0	27	34	26	6	47	28	259	0	49		
Nov. 9.	Panguni...	1 Mr	14	30	2 Ap	12	Chaitra ...	2 Ja	26	31	43	...	13	5	8	46	2	288	32	39		

TABLE XII.—General Ephemeris A.D. 1915—A.D. 1920.

Commence- ment of years in dif- ferent eras.	Tamil month.	Tamil Month						Lunar Month.	New Moon Ending moment of New moon Tithi. ('s Anom. ☉'s Anom.												Deduct for Nakshatras	Deduct for				
		Beginning		End					Mean						Actual											
		Week-day	Month	Day	Last Day	Week-day	Month		Day	Week-day	Month	Day (mean)	Ghatikas	Palas	Day (actual)	Ghatikas	Palas	Week-day	Month	Day			Ghatikas	Palas		
		Month	Day	Month	Day	Month	Day		Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day			Month	Day	Month	Day
K. Y. 5016	Chittirai	3	Ap	13	31	5	My	13	Vaisakha	...	4	Ap	14	29	14	...	24	1	10	51	9	0	59	8		
Sak. 1837	Vaikasi	6	My	14	32	2	Je	14	Jyeshtha	...	6	My	14	1	4	...	4	11	12	49	43	39	30	58		
Vik. 1972	Ani	3	Je	15	31	5	Jl	15	Ashada	...	7	Je	12	32	54	...	43	23	14	48	17	60	2	48		
(S.) Rakshasa.	Adi	6	Jl	16	32	2	Au	16	Sravana	...	2	Jl	12	4	44	...	19	47	16	46	50	89	34	38		
K. 1090 (S.M.)	Avani	3	Au	17	31	5	S	16	Bhadrachudra	...	3	Au	10	36	34	...	53	9	18	45	24	119	6	28		
K. 1090 (N.M.)	Purattasi	6	S	17	30	7	O	16	Asvina	...	5	S	9	8	25	...	23	16	20	43	57	148	33	18		
23 g., 39 p.	Aippasi	1	O	17	30	2	N	15	Kartika	...	6	O	8	40	15	...	51	24	22	42	31	178	10	8		
B. S. 1321.	Kartigai	3	N	16	30	4	D	15	Margasira	...	1	N	7	12	5	...	18	6	24	41	5	207	41	59		
(N.) Prabhava.	Margali	5	D	16	29	5	Ja	13	Pausa	...	2	D	6	43	55	...	44	18	26	39	38	237	13	49		
A. D. 1916	Tai	6	Ja	14	30	7	F	12	Magha	...	4	Ja	5	15	45	...	10	44	1	4	55	266	45	39		
H. 1335.	Masi	1	F	13	29	1	Mr	12	Phalguna	...	5	F	3	47	35	...	38	3	3	3	29	296	17	29		
Oct. 28.	Panguni	2	Mr	13	31	4	Ap	12	Chaitra	...	7	Mr	4	19	25	...	6	40	5	2	2	325	49	19		
											1	Ap	2	51	15	...	37	9	7	0	36	355	21	9		
K. Y. 5017	Chittirai	5	Ap	13	31	7	My	13	Vaisakha	...	3	My	2	23	6	...	9	52	8	59	10	19	37	28		
Sak. 1838	Vaikasi	1	My	14	31	3	Je	13	Jyeshtha	...	4	My	31	54	56	...	44	55	10	57	43	49	9	18		
Vik. 1973	Ani	4	Je	14	32	7	Jl	15	Ashada	...	6	Je	30	26	46	...	21	56	12	56	17	78	41	8		
(S.) Anala.	Adi	1	Jl	16	31	3	Au	15	Sravana	...	7	Jl	29	58	36	30	0	9	14	54	50	108	12	58		
K. 1091 (S. M.)	Avani	4	Au	16	31	6	S	15	Bhadrachudra	...	2	Au	28	30	26	...	38	11	16	53	24	137	44	48		
K. 1091 (N. M.)	Purattasi	7	S	16	31	2	O	16	Asvina	...	4	S	27	2	16	...	14	46	18	51	58	167	16	38		
39 g., 10 p.	Aippasi	3	O	17	29	3	N	14	Kartika	...	5	O	26	34	6	...	49	3	20	50	31	196	48	29		
B. S. 1322	Kartigai	4	N	15	30	5	D	14	Margasira	...	6	N	25	5	56	...	20	50	22	49	5	226	20	19		
(N.) Vibhava	Margali	6	D	15	29	6	Ja	12	Pausa	...	7	D	24	37	47	...	50	12	24	47	38	255	52	9		
A. D. 1917	Tai	7	Ja	13	30	1	F	11	Magha	...	1	D	24	37	47	...	50	12	24	47	38	255	52	9		
H. 1336	Masi	2	F	12	30	3	Mr	13	Phalguna	...	3	Ja	23	9	37	...	17	25	26	46	12	285	23	59		
Oct. 17	Panguni	4	Mr	14	30	5	Ap	12	Chaitra	...	4	F	21	41	27	...	42	56	1	11	29	314	55	49		
											6	Mr	23	13	17	...	7	41	3	10	2	344	27	39		
K. Y. 5018	Chittirai	6	Ap	13	31	1	My	13	Vaisakha	...	7	Ap	21	45	7	...	32	45	5	8	36	8	43	58		
Sak. 1839	Vaikasi	2	My	14	31	4	Je	13	Jyeshtha	...	2	My	21	16	57	20	59	19	7	7	10	38	15	48		
Vik. 1974	Ani	5	Je	14	32	1	Jl	15	Ashada	...	3	Je	19	48	47	...	28	35	9	5	43	67	47	38		
(S.) Pingala	Adi	2	Jl	16	31	4	Au	15	Sravana	...	5	Jl	19	20	37	...	1	47	11	4	17	97	19	28		
K. 1092 (S.M.)	Avani	5	Au	16	31	7	S	15	Bhadrachudra	...	6	Au	17	52	28	...	39	26	13	2	51	126	51	18		
											1	S	16	24	18	...	20	36	15	1	24	156	23	8		
K. 1092 (N.M.)	Purattasi	1	S	16	31	3	O	16	Asvina	...	2	O	15	56	8	16	2	48	16	59	58	185	54	58		
54 g., 41p.	Aippasi	4	O	17	30	5	N	15	Kartika	...	4	N	14	27	58	...	43	34	18	58	31	215	26	49		
B. S. 1323	Kartigai	6	N	16	29	6	D	14	Margasira	...	6	D	14	0	0	...	21	2	20	57	5	244	58	39		
(N.) Sukla.	Margali	7	D	15	30	1	Ja	13	Pausa	...	7	Ja	12	31	38	...	54	20	22	55	39	274	30	29		
A. D. 1918	Tai	2	Ja	14	29	2	F	11	Magha	...	7	Ja	12	31	38	...	54	20	22	55	39	274	30	29		
H. 1337.	Masi	3	F	12	30	4	Mr	13	Phalguna	...	2	F	11	3	28	...	23	7	24	54	12	304	2	19		
Oct. 7.	Panguni	5	Mr	14	30	6	Ap	12	Chaitra	...	3	Mr	12	35	18	...	48	1	26	52	45	333	34	9		
											5	Ap	11	7	8	...	10	56	1	18	3	363	5	59		
K. Y. 5019	Chittirai	7	Ap	13	31	2	My	13	Vaisakha	...	6	My	10	38	59	...	31	4	3	16	36	27	22	18		
Sak. 1840	Vaikasi	3	My	14	31	5	Je	13	Jyeshtha	...	1	Je	9	10	49	8	52	36	5	15	10	56	54	8		
Vik. 1975	Ani	6	Je	14	32	2	Jl	15	Ashada	...	2	Jl	8	42	39	...	16	44	7	13	44	86	25	58		
(S.) Kalyukta.	Adi	3	Jl	16	32	6	Au	16	Sravana	...	3	Jl	7	14	29	6	45	39	9	12	17	115	57	48		
K. 1093 (S.M.)	Avani	7	Au	17	31	2	S	16	Bhadrachudra	...	4	Au	7	14	29	6	45	39	9	12	17	115	57	48		
K. 1093 (N.M.)	Purattasi	3	S	17	30	4	O	16	Asvina	...	5	S	5	46	19	...	20	56	11	10	51	145	29	38		
10 g., 12 p.	Aippasi	5	O	17	30	6	N	15																		

TABLE XIII.

Sunrise from 8° to 12° N. Latitude.

Day of solar year.	Lat. 8° +300'' Long.			Lat. 9° +852'' Long.			Days of Solar months.	Lat. 10° +564'' Long.			Lat. 11° +816'' Long.			Lat. 12° +212'' Long.				
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Trivandram.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Rameswaram.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Madura.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Tanjore.	Eng. date.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Maur.	
	A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920			A.D. 1840— 1920				
1	—447	+31	+497	—443	+32	+1089	1	—439	+34	+841	—435	+36	+1135	13	—431	+38	+572	
2	445	61	530	441	65	1124	2	437	68	877	433	72	1173	14	429	75	611	
3	443	92	562	439	97	1158	3	435	102	913	431	108	1211	15	428	113	650	
4	440	123	596	436	130	1194	4	433	136	949	430	144	1248	16	426	150	689	
5	438	153	629	434	162	1228	5	431	170	985	428	179	1285	17	424	188	729	
6	436	184	661	432	194	1262	6	429	205	1022	426	215	1323	18	422	226	769	
7	434	215	694	430	227	1297	7	427	239	1058	421	251	1361	19	420	263	808	
8	433	245	726	429	259	1333	8	425	273	1094	421	287	1400	20	418	301	847	
9	429	276	760	425	292	1367	9	422	307	1131	419	323	1438	21	415	338	888	
10	428	307	792	424	324	1400	10	420	341	1168	416	359	1475	22	413	376	927	
11	425	337	806	421	356	1415	11	417	375	1185	413	395	1493	April	23	410	414	946
12	421	368	820	417	389	1431	12	414	409	1202	411	431	1512		24	407	451	966
13	418	399	834	414	421	1447	13	411	443	1218	408	467	1530		25	404	489	985
14	415	429	848	411	454	1462	14	408	477	1235	405	503	1549		26	401	526	1005
15	413	460	860	409	486	1476	15	405	511	1252	401	538	1568	27	398	564	1024	
16	409	491	875	405	518	1492	16	402	546	1269	398	574	1586	28	395	602	1044	
17	405	521	890	401	551	1509	17	398	580	1287	395	610	1605	29	391	639	1064	
18	402	552	904	398	583	1524	18	395	614	1303	391	646	1624	30	388	678	1084	
19	398	583	918	394	616	1540	19	391	648	1321	388	682	1643	1	384	715	1104	
20	394	613	933	390	648	1557	20	387	682	1339	384	718	1662	2	381	753	1124	
21	390	644	948	386	680	1573	21	383	716	1357	380	754	1681	3	377	791	1144	
22	387	675	961	382	713	1589	22	379	750	1375	376	790	1701	4	373	828	1165	
23	384	705	975	379	745	1604	23	375	784	1392	372	826	1720	5	371	867	1183	
24	381	736	989	377	778	1619	24	373	818	1408	370	862	1738	6	369	903	1202	
25	378	767	1005	374	810	1634	25	370	852	1425	368	897	1755	7	367	941	1220	
26	375	797	1016	372	842	1648	26	368	887	1441	366	933	1772	8	365	979	1239	
27	372	828	1030	369	875	1653	27	365	921	1458	364	969	1790	9	363	1016	1257	
28	369	859	1044	367	907	1678	28	363	955	1475	362	1005	1807	10	360	1053	1277	
29	366	889	1057	364	940	1692	29	360	989	1492	359	1041	1826	11	358	1091	1295	
30	363	920	1071	362	972	1707	30	358	1024	1506	357	1076	1843	12	356	1128	1304	
31	360	931	1090	360	984	1722	1	356	1038	1522	354	1091	1861	13	353	1144	1333	
32	357	941	1099	357	996	1737	2	354	1052	1537	352	1107	1879	14	351	1161	1352	
33	354	952	1112	355	1009	1751	3	352	1065	1552	350	1122	1896	15	348	1177	1371	
34	351	963	1126	353	1021	1765	4	350	1079	1568	348	1138	1914	16	346	1194	1390	
35	348	973	1140	350	1033	1780	5	348	1093	1584	346	1153	1931	17	344	1210	1408	
36	346	984	1152	344	1045	1799	6	342	1107	1604	340	1168	1952	18	338	1227	1431	
37	340	995	1169	338	1058	1817	7	336	1121	1624	334	1184	1974	19	332	1243	1453	
38	334	1006	1186	332	1070	1835	8	330	1134	1643	328	1199	1995	20	326	1260	1476	
39	328	1016	1203	326	1082	1853	9	324	1148	1663	322	1215	2017	21	320	1276	1498	
40	321	1027	1220	319	1095	1873	10	317	1162	1684	315	1230	2039	22	313	1293	1522	
41	315	1038	1237	313	1107	1891	11	311	1176	1704	309	1245	2059	23	307	1309	1545	
42	308	1048	1247	306	1119	1885	12	304	1190	1700	302	1261	2054	24	300	1326	1541	
43	301	1059	1225	299	1131	1880	13	297	1203	1694	295	1276	2049	25	294	1342	1535	
44	295	1070	1219	293	1144	1873	14	291	1217	1688	289	1282	2043	26	287	1359	1531	
45	288	1081	1213	286	1156	1864	15	284	1231	1682	282	1307	2038	27	280	1375	1527	
46	281	1091	1207	279	1168	1862	16	277	1245	1677	275	1322	2033	28	274	1392	1521	
47	274	1102	1202	272	1180	1857	17	270	1259	1672	268	1338	2029	29	267	1408	1517	
48	267	1113	1196	265	1193	1851	18	263	1272	1666	261	1353	2024	30	260	1425	1513	
49	260	1123	1190	258	1205	1846	19	256	1286	1661	254	1369	2021	31	253	1441	1509	
50	252	1134	1185	250	1217	1841	20	248	1300	1656	247	1384	2014	1	245	1458	1505	
51	245	1145	1180	243	1229	1836	21	241	1314	1651	240	1399	2009	2	238	1474	1501	
52	238	1156	1174	236	1242	1830	22	234	1328	1646	232	1415	2005	3	231	1491	1497	
53	230	1166	1169	228	1254	1826	23	226	1341	1641	225	1430	2000	4	223	1507	1493	
54	223	1177	1163	221	1266	1820	24	219	1355	1636	217	1446	1996	5	216	1524	1489	
55	215	1188	1159	213	1278	1815	25	211	1369	1631	210	1461	1991	6	208	1540	1486	
56	208	1198	1153	206	1291	1810	26	204	1383	1626	202	1476	1987	7	201	1557	1481	
57	199	1209	1149	197	1303	1806	27	195	1397	1623	194	1492	1984	8	193	1573	1478	
58	194	1220	1141	192	1315	1799	28	190	1410	1615	190	1507	1976	9	189	1590	1471	
59	189	1231	1134	187	1327	1791	29	186	1424	1607	186	1523	1968	10	185	1606	1464	
60	184	1241	1126	182	1340	1784	30	182	1438	1598	182	1528	1960	11	181	1623	1456	
61	179	1252	1118	178	1352	1775	31	178	1452	1590	178	1552	1952	12	177	1640	1449	
62	174	1260	1111	174	1339	1767	32	174	1440	1582	174	1540	1944	13	174	1629	1441	

TABLE XIII.

Sunrise from 8° to 12° N. Latitude.

Day of Solar year.	Lat. 8° +300" Long.			Lat. 9° +852" Long.			Days of Solar months.	Lat. 10° +564" Long.			Lat. 11° +816" Long.			Lat. 12° +288" Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Trivandram.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Rameswaram.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Madura.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Tanjore.	Eng. date.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds.
63	-165	+1226	+1107	-165	+1327	+1763	1	-165	+1427	+1578	-165	+1528	+1941	14	-165	+1617	+1718
64	156	1214	1103	156	1314	1860	2	156	1415	1575	156	1516	1938	15	156	1606	1714
65	147	1201	1099	147	1302	1757	3	147	1402	1571	147	1504	1935	16	147	1595	1711
66	138	1188	1096	138	1289	1753	4	138	1390	1568	138	1492	1932	17	138	1583	1708
67	129	1176	1092	129	1277	1749	5	129	1378	1565	129	1481	1930	18	128	1572	1705
68	120	1163	1088	120	1264	1746	6	120	1365	1561	119	1469	1928	19	119	1561	1702
69	110	1150	1085	110	1252	1743	7	110	1353	1559	110	1459	1925	20	110	1550	1699
70	101	1137	1082	101	1239	1739	8	101	1340	1555	101	1445	1922	21	100	1538	1696
71	91	1125	1079	91	1227	1737	9	91	1328	1553	91	1433	1921	22	91	1527	1693
72	82	1112	1065	82	1214	1723	10	82	1316	1539	82	1421	1907	23	81	1516	1690
73	72	1099	1053	72	1202	1711	11	72	1303	1526	72	1409	1893	24	72	1504	1687
74	63	1086	1039	63	1189	1697	12	63	1291	1513	63	1397	1879	25	62	1493	1684
75	54	1074	1026	54	1176	1683	13	54	1278	1499	54	1385	1865	26	54	1482	1681
76	43	1061	1014	43	1164	1671	14	43	1266	1487	43	1373	1852	27	43	1470	1678
77	34	1048	1001	34	1151	1658	15	34	1254	1473	34	1362	1838	28	34	1459	1675
78	25	1035	987	25	1139	1644	16	25	1241	1459	25	1350	1824	29	24	1448	1672
79	15	1023	975	15	1126	1631	17	15	1229	1447	15	1338	1811	30	15	1437	1669
80	5	1010	962	5	1114	1619	18	5	1216	1434	5	1326	1797	1	5	1425	1666
81	+ 4	997	949	+ 4	1101	1605	19	+ 4	1204	1420	+ 4	1314	1783	2	+ 4	1414	1663
82	14	985	936	14	1089	1592	20	14	1192	1407	14	1302	1770	3	14	1403	1660
83	23	972	923	23	1076	1571	21	23	1179	1393	23	1290	1755	4	23	1391	1657
84	33	959	910	33	1064	1566	22	33	1167	1381	33	1278	1742	5	33	1380	1654
85	43	946	898	43	1051	1553	23	43	1154	1368	43	1266	1729	6	43	1369	1651
86	52	934	884	52	1039	1539	24	52	1142	1354	52	1254	1714	7	52	1357	1648
87	61	921	871	61	1026	1526	25	61	1130	1340	61	1243	1700	8	61	1346	1645
88	71	908	858	71	1014	1513	26	71	1117	1327	71	1231	1687	9	71	1335	1642
89	81	895	846	81	1001	1500	27	81	1105	1315	81	1219	1674	10	81	1324	1639
90	90	883	832	90	988	1486	28	90	1092	1301	90	1207	1659	11	90	1312	1636
91	104	870	824	104	976	1478	29	104	1080	1292	104	1196	1650	12	104	1300	1633
92	114	847	811	114	953	1465	30	114	1057	1279	114	1173	1637	13	114	1276	1630
93	124	825	799	124	931	1452	31	124	1034	1266	124	1149	1623	14	124	1252	1627
94	133	802	785	133	908	1439	32	133	1012	1253	134	1126	1610	15	134	1228	1624
95	143	780	773	143	885	1426	1	143	989	1240	143	1103	1596	16	144	1204	1621
96	153	757	760	153	862	1413	2	153	966	1227	153	1079	1582	17	153	1180	1618
97	162	735	747	162	840	1399	3	162	943	1213	163	1056	1569	18	163	1157	1615
98	172	712	734	172	817	1387	4	172	920	1200	172	1033	1555	19	173	1133	1612
99	182	690	721	182	794	1374	5	182	898	1188	182	1010	1542	20	182	1109	1609
100	191	667	708	191	772	1359	6	191	875	1174	191	986	1527	21	191	1085	1606
101	200	645	694	200	749	1347	7	200	852	1160	200	963	1513	22	201	1061	1603
102	209	622	681	209	726	1333	8	209	829	1145	210	940	1498	23	210	1037	1600
103	218	600	680	218	703	1331	9	218	806	1141	219	916	1492	24	219	1013	1597
104	228	577	680	228	681	1329	10	228	784	1138	228	893	1487	25	229	989	1594
105	237	555	680	237	658	1327	11	237	761	1134	237	870	1481	26	238	965	1591
106	246	532	679	246	635	1325	12	246	738	1130	246	846	1476	27	247	941	1588
107	253	510	676	253	613	1320	13	254	715	1125	255	823	1470	28	256	918	1585
108	261	487	675	262	590	1318	14	263	692	1122	264	800	1465	29	265	894	1582
109	271	465	675	272	567	1317	15	272	670	1118	273	777	1459	30	273	870	1579
110	280	442	674	280	544	1313	16	281	647	1114	281	753	1453	31	282	846	1576
111	288	420	672	289	522	1311	17	289	624	1109	290	730	1447	1	290	822	1573
112	297	397	672	297	499	1308	18	298	601	1105	298	707	1441	2	299	798	1570
113	306	375	671	306	476	1305	19	306	578	1100	307	683	1435	3	307	774	1567
114	315	352	670	315	454	1293	20	315	556	1096	316	660	1430	4	316	750	1564
115	323	330	668	323	431	1300	21	323	533	1091	324	637	1423	5	324	726	1561
116	331	307	667	331	408	1296	22	331	510	1086	332	613	1417	6	332	702	1558
117	338	285	664	339	385	1293	23	339	487	1081	339	590	1409	7	340	679	1555
118	347	262	663	347	363	1290	24	347	464	1077	348	567	1404	8	348	655	1552
119	353	239	659	354	340	1285	25	354	442	1071	355	544	1396	9	356	631	1549
120	356	217	656	357	317	1275	26	358	419	1062	359	520	1386		360	607	1546
121	359	194	659	360	295	1265	27	362	396	1053	363	497	1375	1	364	583	1543
122	362	172	662	363	272	1260	28	366	372	1044	367	472	1365	2	369	560	1540
123	365	152	665	367	251	1253	29	369	359	1034	371	457	1354	3	374	544	1537
124	372	132	672	374	249	1249	30	376	346	1028	379	443	1348	4	380	529	1534
125	379	113	679	381	238	1244	31	383	333	1022	385	428	1339	15</			

Tamil, Ani; Malayalam, Mithunam; Bengali, Ashada.

Tamil, Adi; Malayalam, Karkatagam; Bengali, Sravana.

June

July

August

TABLE XIII.

Sunrise from 8° to 12° N. Latitude.

Day or solar year.	Lat. 8° +300" Long.			Lat. 9° +852" Long.			Days of Solar months.	Lat. 10° +564" Long.			Lat. 11° +786" Long.			Lat. 12° +212" Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Trivandram.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Rameswaram.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Madura.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Tanjore.	Eng. date.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Maisur.
		A.D. 1840— 1920			A.D. 1840— 1920			A.D. 1840— 1920		A.D. 1840— 1920		A.D. 1840— 1920			A.D. 1840— 1920		
126	+385	+133	+685	+387	+227	+1239	1	+389	+320	+1015	+392	+414	+1332	16	+394	+497	+789
127	390	123	690	393	215	1245	2	396	307	1009	399	399	1324	17	401	481	780
128	396	114	696	399	204	1251	3	402	295	1003	405	385	1316	18	407	466	771
129	405	104	705	407	193	1259	4	409	282	997	411	370	1307	19	413	450	761
130	409	94	709	412	181	1264	5	415	269	990	418	356	1300	20	420	434	752
131	415	84	715	418	170	1270	6	421	256	985	424	341	1291	21	426	419	743
132	421	75	721	424	159	1276	7	427	243	991	430	327	1282	22	432	403	732
133	427	65	727	430	147	1282	8	433	230	997	436	312	1287	23	438	387	735
134	434	55	734	437	136	1289	9	439	217	1003	441	298	1291	24	444	372	738
135	438	45	738	441	125	1293	10	444	204	1008	447	283	1295	25	449	356	741
August																	
136	444	36	744	447	113	1299	11	450	191	1014	453	269	1300	26	455	340	744
137	449	26	749	452	102	1304	12	455	178	1019	458	254	1304	27	460	324	746
138	454	16	754	457	91	1309	13	460	166	1024	463	240	1308	28	465	309	748
139	461	6	761	464	79	1316	14	466	153	1030	468	225	1312	29	471	293	751
140	464	0	764	467	68	1319	15	470	140	1034	473	211	1315	30	475	277	753
141	469	0	769	472	57	1324	16	475	127	1039	478	196	1319	31	480	262	755
142	474	0	774	477	45	1329	17	480	114	1044	483	182	1323	1	485	246	757
143	478	0	778	481	34	1333	18	484	101	1048	487	167	1326	2	490	230	759
144	483	0	783	486	23	1338	19	489	88	1053	490	153	1328	3	494	215	760
145	484	0	784	487	11	1339	20	490	75	1054	492	138	1328	4	497	199	761
Tamil, Avani; Malayalam, Chingam; Bengal, Bhadrpada.																	
146	486	0	786	488	0	1340	21	491	62	1055	494	124	1329	5	500	183	761
147	487	0	787	490	0	1342	22	493	49	1057	495	109	1329	6	502	167	760
148	489	0	789	491	0	1343	23	494	37	1058	496	95	1329	7	504	152	759
149	490	0	790	492	0	1344	24	495	24	1059	497	80	1329	8	506	136	758
150	491	0	791	494	0	1346	25	496	11	1060	499	66	1329	9	507	120	757
151	492	0	792	495	0	1347	26	498	0	1062	500	51	1329	10	508	105	755
152	494	0	794	496	0	1348	27	499	0	1063	501	36	1329	11	509	88	753
153	495	0	795	497	0	1349	28	500	0	1064	502	35	1329	12	510	85	751
154	496	0	796	498	0	1350	29	501	0	1065	503	34	1329	13	511	82	749
155	498	0	798	499	0	1351	30	502	0	1066	504	32	1328	14	512	80	748
156	500	0	800	500	0	1352	31	503	0	1067	506	31	1329	15	513	77	746
Tamil, Asvini; Bengal, Asvina.																	
157	501	0	801	501	0	1353	1	504	0	1068	508	30	1330	16	514	74	744
158	502	0	802	503	0	1355	2	506	0	1070	510	29	1331	17	515	71	742
159	503	0	803	505	0	1357	3	508	0	1072	512	28	1332	18	516	68	740
160	504	0	804	507	0	1359	4	510	0	1074	514	26	1332	19	518	66	740
161	505	0	805	509	0	1361	5	512	0	1076	515	25	1332	20	519	63	738
162	506	0	806	510	0	1362	6	513	0	1077	517	24	1333	21	520	60	736
163	508	0	808	512	0	1364	7	514	0	1078	518	23	1334	22	522	57	734
164	509	0	809	513	0	1365	8	516	0	1080	520	22	1335	23	524	54	733
165	510	0	810	514	0	1366	9	517	0	1081	521	20	1335	24	525	52	731
166	511	0	811	515	0	1367	10	517	0	1081	521	19	1333	25	525	49	728
Tamil, Purattasi; Malayalam, Kanni; Bengal, Purattasi.																	
167	512	0	812	515	0	1367	11	519	0	1083	522	18	1333	26	526	46	726
168	513	0	813	516	0	1368	12	519	0	1083	523	17	1333	27	527	43	725
169	513	0	813	516	0	1368	13	520	0	1084	524	16	1333	28	527	40	722
170	513	0	813	516	0	1368	14	520	0	1084	524	14	1332	29	528	38	720
171	514	0	814	517	0	1369	15	521	0	1085	524	13	1330	30	528	35	717
172	515	0	815	518	0	1370	16	521	0	1085	525	12	1330	1	528	32	714
173	515	0	815	518	0	1370	17	521	0	1085	524	11	1328	2	528	29	711
174	514	0	814	517	0	1369	18	520	0	1084	524	10	1327	3	528	26	708
175	513	0	813	516	0	1368	19	520	0	1084	524	8	1326	4	527	24	704
176	512	0	812	516	0	1368	20	520	0	1084	523	7	1323	5	527	21	701
October																	
177	511	0	811	515	0	1367	21	519	0	1083	523	6	1322	6	526	18	697
178	510	0	810	514	0	1366	22	518	0	1082	522	5	1320	7	525	15	694
179	509	0	809	513	0	1365	23	517	0	1081	521	4	1318	8	525	12	691
180	508	0	808	512	0	1364	24	516	0	1080	520	2	1316	9	524	10	687
181	507	0	807	511	0	1363	25	514	0	1078	518	1	1312	10	522	7	682
182	506	0	806	510	0	1362	26	513	0	1077	517	0	1310	11	521	4	678
183	505	0	805	509	0	1361	27	512	0	1076	515	0	1307	12	519	0	673
184	504	0	804	508	0	1360	28	511	0	1075	514	—	1305	13	518	—	669
185	503	0	803	506	0	1358	29	509	0	1073	512	2	1302	14	516	6	664
186	501	0	801	504	0	1356	30	507	0	1071	510	4	1298	15	514	9	659

TABLE XIII.

Sunrise from 8° to 12° N. Latitude.

Day of Solar year.	Lat. 8° +300'' Long.			Lat. 9° +852'' Long.			Days of Solar Months.	Lat. 10° +564'' Long.			Lat. 11° +416'' Long.			Lat. 12° +212'' Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Trivandram.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Rameswaram.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Madura.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Tanjore.	Eng. date.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Mysore.
			A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920
187	+499	+0	+799	+502	+0	+1354	1	+505	+0	+1069	+508	-5	+1295	16	+512	-12	+65
188	497	0	797	500	0	1352	2	503	0	1067	506	6	1292	17	510	14	65
189	494	0	794	497	0	1349	3	500	0	1064	503	7	1288	18	507	17	64
190	491	0	791	494	0	1346	4	497	0	1061	500	8	1284	19	504	20	63
191	488	0	788	491	0	1343	5	494	0	1058	497	10	1279	20	501	23	63
192	485	0	785	488	0	1340	6	491	0	1055	494	11	1275	21	498	26	62
193	482	0	782	485	0	1337	7	488	0	1052	491	12	1271	22	495	29	61
194	479	0	779	482	0	1334	8	485	0	1049	488	13	1254	23	492	32	60
195	476	0	776	479	0	1331	9	482	0	1036	485	14	1236	24	489	35	58
196	473	0	773	476	0	1328	10	479	0	1020	482	16	1219	25	486	38	56
197	469	0	769	472	0	1324	11	475	0	1003	478	17	1200	26	482	41	54
198	465	0	765	468	0	1320	12	471	0	987	474	18	1182	27	478	43	52
199	462	0	762	465	0	1317	13	468	0	971	471	19	1164	28	475	46	50
200	458	0	758	461	0	1302	14	464	0	954	467	20	1146	29	471	49	48
201	454	0	754	457	0	1286	15	460	0	937	463	22	1127	30	467	52	46
202	450	0	750	453	0	1271	16	456	0	920	459	23	1109	31	463	55	44
203	445	0	745	448	0	1255	17	451	0	902	454	24	1089	1	458	58	42
204	440	0	740	443	0	1238	18	446	0	884	449	25	1070	2	453	61	40
205	436	0	736	439	0	1223	19	442	0	867	445	26	1051	3	449	64	38
206	431	0	725	434	0	1207	20	437	0	849	440	28	1032	4	444	67	36
207	427	0	711	430	0	1191	21	433	0	832	436	29	1013	5	440	70	34
208	422	0	696	425	0	1175	22	428	0	815	431	30	994	6	435	72	32
209	417	0	681	420	0	1159	23	423	0	797	425	31	973	7	429	75	30
210	413	0	668	416	0	1143	24	419	0	780	420	32	954	8	424	78	28
211	411	0	656	414	0	1130	25	417	0	765	418	34	937	9	422	81	26
212	409	0	644	412	0	1117	26	415	0	750	416	35	921	10	420	84	24
213	407	0	632	410	0	1103	27	413	0	735	414	36	904	11	418	88	22
214	405	0	621	408	0	1090	28	411	0	720	412	50	888	12	416	104	210
215	403	0	609	406	0	1077	29	409	-10	705	410	65	871	13	414	120	193
216	397	0	593	400	0	1059	30	403	23	686	406	79	853	14	408	135	171
217	391	0	577	394	0	1042	1	397	36	667	400	94	832	15	402	151	149
218	385	0	562	388	0	1025	2	391	48	649	394	108	812	16	396	166	128
219	378	0	545	381	0	1006	3	384	61	629	387	123	790	17	389	182	105
220	372	0	529	375	-11	989	4	+378	74	610	381	137	770	18	383	198	83
221	365	0	513	368	23	971	5	371	87	590	374	152	748	19	376	214	60
222	358	0	496	361	34	952	6	366	100	572	367	166	727	20	369	229	38
223	351	0	479	354	45	934	7	357	113	549	360	181	704	21	362	245	14
224	344	0	450	347	57	904	8	350	126	519	353	195	674	22	355	261	17
225	337	0	420	340	68	875	9	343	139	489	346	210	643	23	348	276	47
226	330	-6	391	333	79	845	10	336	152	460	339	224	613	24	341	292	71
227	322	16	360	325	91	814	11	328	165	429	331	239	582	25	333	308	119
228	315	26	330	318	102	785	12	321	177	399	324	253	552	26	326	323	141
229	307	36	300	310	113	754	13	313	190	368	316	268	520	27	318	339	173
230	299	45	269	302	125	723	14	305	203	337	308	282	489	28	310	355	205
231	291	55	239	294	136	692	15	297	216	307	300	297	458	29	302	371	237
232	283	65	208	286	147	662	16	289	229	276	292	311	426	30	294	386	269
233	275	75	178	278	159	631	17	281	242	245	284	326	395	1	286	402	301
234	266	84	146	269	170	599	18	272	255	213	275	340	363	2	277	418	334
235	258	94	116	261	181	569	19	264	268	182	267	355	331	3	269	433	366
236	250	104	85	253	193	538	20	256	281	152	259	369	300	4	261	449	398
237	242	114	55	245	204	507	21	248	294	121	251	384	269	5	253	465	430
238	233	123	23	236	215	475	22	239	306	89	242	398	237	6	244	480	462
239	224	133	-8	227	227	444	23	230	319	57	233	413	204	7	235	496	495
240	216	143	39	219	238	413	24	222	332	26	225	427	173	8	227	512	527
241	207	152	70	210	249	381	25	213	345	-5	216	442	141	9	218	528	560
242	199	162	103	201	261	350	26	204	358	37	207	456	108	10	209	543	593
243	198	172	122	199	272	325	27	199	372	65	199	472	77	11	199	560	627
244	190	194	155	190	295	293	28	190	395	97	190	495	45	12	190	584	660
245	180	217	187	180	317	260	29	180	418	130	180	519	-11	13	180	608	694
246	170	239	220	170	340	228	30	170	440	162	170	542	22	14	170	632	728

Tamil, Kartigai; Malayalam, Vrischikam; Bengali, Margasira.

October
November
December

TABLE XIII.

Sunrise from 8° to 12° N Latitude.

Solar year.	Lat. 8° +300" Long.			Lat. 9° +852" Long.			Days of Solar Months.	Lat. 10° +564" Long.			Lat. 11° +816" Long.			Lat. 12° +212" Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Trivandram.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Rameswaram.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Madura.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Tanjore.	Eng. date.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Maisur.
			A.D. 1840—1920			A.D. 1840—1920				A.D. 1840—1920			A.D. 1840—1920				A.D. 1840—1920
247	+160	—262	—252	+160	—363	+195	1	+160	—463	—195	+160	—565	—55	15	+160	—656	—762
248	150	285	285	150	385	162	2	150	486	228	150	588	88	16	150	679	795
249	140	307	317	140	408	130	3	140	509	261	140	612	122	17	140	703	829
250	130	330	350	130	431	97	4	130	532	294	130	635	155	18	130	727	863
251	120	352	362	120	454	64	5	120	554	326	120	658	188	19	120	751	897
252	110	375	415	110	476	31	6	110	577	359	110	682	222	20	110	775	931
253	100	397	447	100	499	— 1	7	100	600	392	100	705	255	21	100	799	965
254	90	420	480	90	522	34	8	90	623	426	90	728	290	22	90	823	998
255	80	442	503	80	544	56	9	80	646	448	80	752	312	23	80	847	1019
256	70	465	525	70	567	79	10	70	668	471	70	775	334	24	70	871	1041
257	60	487	548	60	590	102	11	60	691	493	60	798	356	25	60	895	1062
258	50	510	571	50	613	124	12	50	714	516	50	821	378	26	50	918	1083
259	40	532	594	40	635	147	13	40	737	538	40	845	399	27	40	942	1104
260	30	555	616	30	658	169	14	30	760	560	30	868	421	28	30	966	1126
261	20	577	639	20	681	192	15	20	782	583	20	891	443	29	20	990	1147
262	10	600	662	10	703	214	16	10	805	605	10	915	465	30	10	1014	1168
263	0	622	685	0	726	237	17	0	828	628	0	938	487	31	0	1038	1190
264	—10	645	707	—10	749	257	18	—10	851	649	—10	961	508	1	—10	1062	1210
265	20	667	730	20	772	280	19	20	874	676	20	985	529	2	20	1086	1230
266	29	690	752	28	794	302	20	28	896	693	28	1008	551	3	28	1110	1252
267	38	712	773	37	817	324	21	37	919	714	37	1031	572	4	37	1134	1272
268	48	735	796	47	840	346	22	47	942	737	47	1054	594	5	47	1157	1293
269	59	757	820	57	862	369	23	57	965	759	57	1078	615	6	57	1181	1314
270	68	780	842	66	885	390	24	66	988	780	66	1101	636	7	66	1205	1335
271	78	802	864	77	908	414	25	77	1010	804	77	1124	659	8	77	1229	1357
272	88	825	887	87	931	437	26	87	1033	826	87	1148	681	9	87	1253	1378
273	98	847	910	97	953	459	27	97	1056	849	97	1171	703	10	97	1277	1400
274	104	870	929	104	976	479	28	104	1080	868	104	1196	722	11	104	1300	1418
275	111	883	948	111	988	498	29	111	1092	887	111	1208	741	12	111	1311	1436
276	119	895	969	118	1001	518	1	118	1105	907	118	1220	760	13	118	1323	1455
277	126	908	988	126	1014	539	2	125	1117	926	125	1232	778	14	125	1334	1473
278	134	921	1010	133	1026	558	3	133	1130	947	132	1246	798	15	132	1345	1491
279	141	934	1029	140	1039	577	4	140	1142	966	139	1255	816	16	139	1356	1509
280	149	946	1050	148	1051	598	5	147	1154	985	146	1267	835	17	146	1368	1528
281	156	959	1070	155	1064	617	6	154	1167	1006	154	1279	855	18	153	1379	1546
282	164	972	1090	162	1076	637	7	162	1179	1025	161	1291	874	19	160	1390	1564
283	171	985	1110	170	1089	657	8	169	1192	1045	168	1303	893	20	167	1402	1583
284	179	997	1131	177	1101	677	9	176	1204	1064	175	1315	911	21	174	1413	1602
285	186	1010	1127	184	1114	672	10	183	1216	1057	182	1329	903	22	181	1424	1592
286	194	1023	1125	192	1126	667	11	191	1229	1051	189	1339	894	23	188	1436	1583
287	201	1035	1121	199	1139	662	12	198	1241	1045	196	1351	886	24	195	1447	1573
288	209	1048	1118	206	1151	657	13	205	1254	1038	204	1363	878	25	202	1458	1564
289	216	1061	1114	214	1164	653	14	212	1266	1031	211	1374	870	26	209	1469	1554
290	224	1074	1112	221	1176	647	15	220	1278	1025	218	1386	862	27	216	1481	1545
291	231	1086	1108	228	1189	642	16	227	1291	1018	225	1398	853	28	223	1492	1535
292	239	1099	1105	236	1202	638	17	234	1303	1012	232	1410	845	29	230	1503	1526
293	246	1112	1102	243	1214	633	18	241	1316	1005	239	1422	836	30	237	1515	1516
294	254	1125	1099	250	1227	627	19	249	1328	999	246	1434	828	31	244	1526	1507
295	261	1137	1095	258	1239	623	20	256	1340	992	254	1446	821	1	251	1537	1497
296	269	1150	1092	265	1252	618	21	263	1353	985	261	1458	812	2	258	1549	1488
297	276	1163	1089	272	1264	613	22	270	1365	979	268	1470	804	3	265	1560	1478
298	284	1176	1086	280	1277	608	23	278	1378	973	275	1482	795	4	273	1571	1470
299	291	1188	1082	287	1289	603	24	285	1390	966	282	1493	787	5	281	1582	1461
300	299	1201	1080	294	1302	598	25	292	1402	959	289	1505	779	6	288	1594	1452
301	306	1214	1076	302	1314	594	26	299	1415	952	296	1517	770	7	295	1605	1442
302	314	1226	1073	309	1327	588	27	306	1427	946	304	1529	763	8	303	1616	1434
303	321	1239	1069	316	1339	583	28	314	1440	940	311	1541	754	9	310	1628	1424
304	325	1252	1063	323	1352	578	29	321	1452	933	318	1552	746	10	317	1640	1415
305	328	1241	1055	326	1340	569	30	324	1438	922	321	1537	734	11	320	1623	1401

TABLE XIII.

Sunrise from 8° to 12° N. Latitude.

Day of Solar year.	Lat. 8° +300" Long.			Lat. 9° +852" Long.			Days of Solar months.	Lat. 10° +564" Long.			Lat. 11° +816" Long.			Lat. 12° +216" Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds.	
			A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920			A.D. 1840— 1920	
306	-332	-1231	-1048	-330	-1327	-560	1	-327	-1424	-911	-324	-1521	-721	12	-323	-1607	-138
307	335	1220	1041	333	1315	551	2	331	1411	902	323	1506	710	13	327	1590	137
308	339	1209	1034	334	1303	543	3	334	1397	891	331	1490	697	14	330	1574	136
309	342	1198	1026	340	1291	533	4	337	1383	880	334	1475	685	15	333	1557	134
310	346	1188	1019	344	1278	525	5	341	1369	870	338	1460	674	16	337	1541	133
311	349	1177	1012	347	1266	516	6	344	1355	859	341	1444	661	17	340	1524	132
312	353	1166	1005	351	1254	509	7	347	1342	849	344	1429	649	18	343	1508	130
313	356	1156	997	354	1242	498	8	351	1328	839	348	1413	637	19	347	1491	129
314	360	1145	990	358	1229	490	9	354	1314	828	351	1398	625	20	350	1475	128
315	363	1134	983	361	1217	481	10	357	1300	817	354	1383	614	21	353	1458	126
316	367	1123	956	365	1205	453	11	361	1281	787	358	1367	582	22	357	1442	124
317	370	1113	929	368	1193	423	12	364	1273	756	361	1352	549	23	360	1455	120
318	374	1102	902	372	1180	395	13	367	1259	725	364	1336	516	24	363	1409	116
319	377	1091	874	375	1168	360	14	371	1245	685	368	1321	484	25	367	1392	113
320	381	1081	847	379	1156	337	15	374	1231	674	371	1306	451	26	370	1376	109
321	384	1070	820	382	1144	308	16	377	1217	633	374	1290	419	27	373	1359	106
322	388	1059	793	386	1131	279	17	381	1204	602	378	1275	387	28	377	1343	103
323	391	1048	766	389	1119	250	18	384	1190	571	381	1259	354	1	380	1326	99
324	395	1038	739	393	1107	221	19	387	1176	540	384	1244	321	2	383	1310	96
325	398	1027	711	396	1095	192	20	391	1162	510	388	1229	289	3	387	1293	92
326	402	1016	685	400	1082	164	21	394	1148	479	391	1213	256	4	390	1277	89
327	405	1006	657	403	1070	134	22	397	1135	448	394	1198	223	5	393	1260	85
328	409	995	630	407	1058	106	23	401	1121	418	398	1182	191	6	397	1244	82
329	412	984	603	410	1045	76	24	404	1107	387	401	1167	158	7	400	1227	79
330	415	973	575	414	1033	48	25	407	1093	356	404	1152	125	8	403	1211	75
331	418	963	547	417	1021	19	26	411	1079	326	408	1136	94	9	406	1194	72
332	422	962	521	419	1009	+ 12	27	414	1066	294	411	1121	61	10	408	1178	68
333	425	941	493	422	996	41	28	417	1052	263	414	1105	28	11	411	1161	65
334	429	931	465	425	984	71	29	421	1038	233	418	1090	+ 4	12	414	1145	61
335	432	920	439	428	972	100	1	424	1024	202	420	1076	38	13	417	1128	58
336	432	889	408	428	940	132	2	424	990	163	420	1040	74	14	417	1090	54
337	433	859	378	429	907	164	3	425	956	135	421	1004	109	15	418	1053	50
338	433	828	347	429	875	196	4	425	922	101	421	968	145	16	418	1015	46
339	434	797	318	430	842	228	5	426	888	68	422	932	180	17	419	978	43
340	434	766	287	430	810	260	6	426	854	34	422	896	216	18	419	940	39
341	435	736	258	431	778	291	7	427	820	1	423	861	250	19	420	902	35
342	435	705	227	431	745	324	8	427	785	+ 34	423	825	286	20	420	865	32
343	436	675	197	432	713	355	9	428	751	67	424	789	321	21	421	827	28
344	436	640	167	432	680	388	10	428	717	101	424	753	356	22	421	790	24
345	437	613	137	433	648	419	11	429	683	135	425	717	391	23	422	752	21
346	437	583	106	433	616	451	12	429	649	169	425	681	427	24	422	714	17
347	438	552	77	434	583	483	13	430	615	202	426	645	462	25	423	677	13
348	438	521	46	434	551	515	14	430	581	236	426	609	498	26	423	639	9
349	439	491	16	435	518	547	15	431	547	269	427	573	533	27	424	602	6
350	439	460	+ 14	435	486	579	16	431	513	303	427	537	568	28	424	564	2
351	440	429	44	436	454	610	17	432	479	337	428	502	603	29	425	526	+ 13
352	440	399	75	436	421	643	18	432	444	371	428	466	639	30	425	489	50
353	441	368	104	437	389	674	19	433	410	404	429	430	674	31	426	451	87
354	441	337	135	437	356	707	20	433	376	438	429	394	710	1	426	414	124
355	442	307	165	438	324	738	21	434	342	471	430	358	745	2	427	376	161
356	442	276	195	438	292	770	22	434	308	505	430	322	781	3	427	338	199
357	443	245	225	439	259	802	23	435	274	538	431	286	816	4	428	301	235
358	443	215	256	439	227	834	24	435	240	572	431	250	852	5	428	263	273
359	444	184	285	440	194	866	25	436	206	605	432	214	887	6	429	226	309
360	444	153	316	440	162	898	26	436	172	639	432	178	922	7	429	188	347
361	445	123	346	441	130	929	27	437	138	673	433	143	957	8	430	150	384
362	445	92	376	441	97	962	28	437	103	707	433	107	993	9	430	113	421
363	446	61	406	442	65	993	29	438	69	740	434	71	1028	10	431	75	459
364	446	31	437	442	32	1026	30	438	35	774	434	36	1064	11	431	38	496
365	447	0	466	443	0	1057	31	439	0	807	435	0	1099	12	432	0	533

TABLE XIII.

Sunrise from 13° to 17° N. Latitude.

Solar year.	Lat. 13° +1072" Long.	Lat. 14° +1008" Long.	Lat. 15° +168" Long.	Lat. 16° -300" Long.	Lat. 17° +648" Long.													
	Eqn. of time in seconds.	Eqn. of time in seconds.	Eqn. of time in seconds.	Eqn. of time in seconds.	Eqn. of time in seconds.													
	☉'s Trop. Long. in seconds.	☉'s Trop. Long. in seconds.	☉'s Trop. Long. in seconds.	☉'s Trop. Long. in seconds.	☉'s Trop. Long. in seconds.													
	Total Corrn. in seconds. Madras.	Total Corrn. in seconds. Nellore.	Total Corrn. in seconds. Vijayanagaram.	Total Corrn. in seconds. Belgaum.	Total Corrn. in seconds. Hyderabad.													
	A.D. 1840—1920	A.D. 1840—1920	A.D. 1840—1920	A.D. 1840—1920	A.D. 1840—1920													
1	—428	+39	+1464	—424	+41	+1445	1	—420	+43	+651	—417	+45	+212	13	—413	+46	+1208	
2	426	78	1505	422	82	1488	2	418	86	697	415	89	259	14	411	93	1256	
3	424	118	1546	420	123	1531	3	416	129	741	413	133	305	15	409	139	1305	
4	423	157	1586	419	164	1573	4	415	172	785	411	178	352	16	408	186	1354	
5	421	196	1627	417	205	1616	5	413	215	830	410	222	397	17	406	232	1401	
6	419	235	1669	415	246	1659	6	411	258	875	407	267	445	18	404	278	1450	
7	417	274	1705	413	287	1702	7	409	301	920	406	311	490	19	402	325	1498	
8	414	314	1752	410	328	1746	8	407	344	965	403	351	538	20	399	371	1547	
9	412	351	1783	406	369	1791	9	404	387	1011	401	395	584	21	397	418	1596	
10	409	388	1839	405	410	1835	10	402	430	1056	398	440	638	22	395	464	1645	
April																		
11	407	428	1859	403	451	1856	11	399	473	1082	396	484	662	23	392	510	1672	
12	404	467	1880	400	492	1879	12	396	516	1106	393	529	688	24	389	557	1688	
13	401	506	1901	397	533	1901	13	394	559	1128	391	573	712	25	387	603	1724	
14	398	545	1922	394	574	1923	14	391	602	1152	387	618	738	26	384	650	1751	
15	395	584	1943	391	615	1945	15	388	645	1176	384	662	763	27	381	696	1777	
16	392	624	1965	388	656	1968	16	384	688	1201	381	707	789	28	378	743	1801	
17	388	663	1987	385	697	1990	17	381	731	1235	378	751	814	29	374	790	1832	
18	385	702	2008	381	738	2013	18	378	774	1248	375	796	839	30	371	836	1859	
19	382	741	2029	378	779	2036	19	374	817	1273	371	840	866	1	368	883	1885	
20	377	780	2052	374	820	2059	20	370	860	1298	367	885	892	2	364	929	1913	
May																		
21	374	820	2073	370	861	2082	21	367	903	1322	364	929	917	3	360	973	1941	
22	370	859	2095	366	902	2106	22	363	946	1351	360	974	944	4	358	1019	1966	
23	368	898	2115	364	943	2127	23	361	989	1369	358	1018	968	5	356	1066	1992	
24	366	937	2135	362	984	2148	24	359	1032	1392	356	1063	992	6	354	1113	2018	
25	364	976	2155	360	1025	2166	25	357	1075	1415	354	1107	1016	7	352	1159	2043	
26	362	1016	2176	358	1066	2191	26	355	1118	1438	352	1152	1041	8	350	1206	2061	
27	360	1055	2196	356	1107	2212	27	353	1161	1461	350	1196	1065	9	348	1252	2095	
28	358	1094	2216	354	1148	2233	28	351	1204	1483	349	1241	1088	10	347	1298	2120	
29	356	1123	2236	352	1189	2255	29	349	1247	1506	348	1285	1114	11	346	1345	2144	
30	354	1176	2256	350	1232	2276	30	347	1290	1529	347	1336	1135	12	345	1392	2169	
June																		
31	352	1194	2276	348	1251	2297	1	346	1313	1545	346	1358	1158	13	344	1416	2194	
32	350	1212	2296	347	1271	2318	2	345	1334	1573	345	1391	1182	14	343	1439	2218	
33	348	1230	2316	346	1290	2338	3	344	1354	1594	344	1403	1205	15	342	1463	2249	
34	347	1248	2335	345	1309	2358	4	343	1375	1616	340	1425	1231	16	338	1487	2247	
35	341	1266	2359	339	1328	2383	5	337	1396	1643	335	1447	1258	17	332	1510	2277	
36	335	1285	2384	333	1348	2409	6	331	1417	1670	329	1470	1287	18	326	1531	2307	
37	329	1303	2408	327	1367	2434	7	325	1438	1697	323	1492	1315	19	321	1558	2359	
38	324	1321	2431	322	1386	2458	8	320	1458	1722	317	1514	1343	20	315	1582	2389	
39	317	1339	2456	316	1406	2484	9	313	1479	1750	311	1537	1372	21	309	1605	2418	
40	311	1357	2480	309	1425	2510	10	307	1500	1777	305	1559	1400	22	303	1629	2448	
July																		
41	305	1375	2503	303	1444	2537	11	301	1521	1803	299	1581	1429	23	297	1653	2479	
42	298	1393	2499	296	1464	2534	12	294	1542	1800	292	1604	1427	24	290	1676	2478	
43	292	1411	2494	290	1483	2530	13	288	1562	1797	286	1626	1424	25	284	1700	2475	
44	285	1429	2491	283	1502	2527	14	282	1583	1793	280	1648	1421	26	278	1724	2473	
45	278	1447	2487	277	1521	2523	15	275	1604	1791	273	1670	1419	27	271	1747	2471	
46	272	1466	2482	270	1541	2519	16	268	1625	1788	267	1693	1416	28	265	1771	2469	
47	265	1484	2478	263	1560	2516	17	261	1646	1785	259	1715	1416	29	258	1795	2468	
48	258	1502	2474	256	1579	2513	18	254	1666	1783	253	1737	1413	30	251	1819	2466	
49	251	1520	2471	249	1599	2510	19	248	1687	1779	246	1760	1411	31	244	1842	2464	
50	244	1538	2467	242	1618	2507	20	241	1708	1777	239	1782	1409	1	237	1866	2463	
August																		
51	237	1556	2463	235	1637	2504	21	234	1729	1774	232	1804	1407	2	230	1890	2462	
52	229	1574	2460	228	1657	2501	22	226	1750	1772	225	1827	1405	3	223	1913	2461	
53	222	1592	2457	220	1676	2499	23	219	1770	1770	217	1849	1404	4	216	1937	2459	
54	214	1610	2454	213	1695	2496	24	212	1791	1767	210	1871	1402	5	209	1961	2458	
55	207	1628	2450	206	1714	2493	25	204	1812	1766	203	1893	1400	6	201	1984	2457	
56	200	1647	2446	198	1734	2490	26	197	1833	1763	196	1916	1398	7	194	2008	2456	
57	192	1665	2443	190	1753	2488	27	189	1854	1761	188	1938	1398	8	186	2032	2456	
58	188	1683	2436	186	1772	2482	28	184	1874	1757	183	1960	1394	9	182	2056	2451	
59	184	1701	2430	182	1792	2476	29	180	1895	1751	179	1983	1389	10	178	2079	2447	
60	180	1719	2423	178	1811	2470	30	176	1916	1746	175	2005	1381	11	174	2103	2442	
61	176	1736	2416	174	1832	2464	31	172	1936	1740	171	2028	1379	12	171	2128	2437	
62	172	1755	2409	170	1852	2458	32	168	1956	1734	167	2049	1374	13	167	2150	2433	

TABLE XIII.

Sunrise from 13° to 17° N. Latitude.

Day of Solar year.	Lat. 13° +1072" Long.			Lat. 14° +1008" Long.			Days of Solar months.	Lat. 15° +168" Long.			Lat. 16° +300" Long.			Eng. date.	Lat. 17° +400" Long.		
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Madras.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Nellore.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Vijayanagaram.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Belgaum.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds.
	A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920		
63	-164	+1714	+2406	-164	+1812	+2454	1	-164	+1917	+1729	-163	+2010	+1369	14	-163	+2111	+2406
64	155	1704	2405	155	1802	2453	2	155	1907	1728	154	2001	1369	15	154	2103	2405
65	146	1693	2403	146	1792	2452	3	146	1898	1728	145	1992	1369	16	145	2094	2403
66	137	1682	2401	137	1781	2450	4	137	1888	1727	136	1983	1369	17	136	2086	2401
67	128	1671	2399	128	1771	2449	5	127	1878	1727	126	1975	1371	18	127	2078	2400
68	119	1660	2397	119	1761	2448	6	118	1869	1727	118	1966	1370	19	118	2069	2399
69	109	1650	2397	109	1751	2448	7	109	1859	1626	109	1957	1370	20	108	2060	2398
70	100	1639	2395	100	1741	2447	8	100	1850	1727	99	1948	1371	21	99	2052	2397
71	91	1628	2393	91	1731	2445	9	90	1840	1726	90	1939	1370	22	90	2044	2396
72	81	1617	2379	81	1721	2430	10	81	1830	1709	81	1930	1353	23	80	2036	2411
73	72	1606	2363	72	1711	2414	11	71	1821	1694	71	1921	1337	24	71	2027	2400
74	62	1596	2349	62	1701	2399	12	62	1811	1677	62	1912	1319	25	62	2019	2399
75	54	1585	2332	54	1691	2382	13	54	1802	1660	54	1903	1301	26	54	2010	2398
76	43	1574	2319	43	1680	2368	14	43	1792	1645	43	1894	1286	27	43	2002	2397
77	34	1563	2304	33	1670	2353	15	33	1782	1630	33	1886	1270	28	33	1994	2394
78	24	1552	2289	24	1660	2337	16	24	1773	1613	24	1877	1253	29	24	1985	2391
79	15	1542	2274	15	1650	2321	17	15	1763	1597	15	1868	1235	30	15	1977	2295
80	5	1531	2259	5	1640	2306	18	5	1754	1581	5	1859	1219	1	5	1968	2278
81	+ 4	1520	2244	+ 4	1630	2290	19	+ 4	1744	1565	+ 4	1850	1202	2	+ 4	1960	2261
82	14	1509	2230	14	1620	2275	20	14	1734	1549	14	1841	1186	3	14	1952	2244
83	23	1498	2214	23	1610	2259	21	23	1725	1533	23	1832	1169	4	23	1943	2227
84	33	1488	2200	33	1600	2244	22	33	1715	1517	33	1823	1152	5	33	1935	2220
85	43	1477	2185	43	1590	2229	23	42	1706	1501	42	1814	1135	6	42	1926	2192
86	52	1466	2170	52	1579	2213	24	52	1696	1485	52	1805	1119	7	51	1918	2174
87	61	1455	2155	61	1569	2197	25	61	1686	1469	61	1797	1102	8	61	1910	2158
88	71	1444	2140	71	1559	2182	26	71	1677	1453	70	1788	1085	9	70	1901	2140
89	80	1434	2125	80	1549	2166	27	80	1667	1437	80	1779	1068	10	80	1893	2123
90	90	1423	2110	89	1539	2150	28	89	1658	1420	89	1770	1051	11	89	1884	2106
91	105	1412	2101	105	1528	2141	29	105	1648	1411	105	1760	1041	12	106	1876	2090
92	115	1388	2087	115	1503	2126	30	115	1622	1395	116	1734	1026	13	116	1849	2073
93	124	1363	2071	125	1478	2111	31	125	1597	1380	125	1708	1109	14	126	1823	2063
94	134	1339	2063	134	1453	2095	32	135	1571	1364	135	1681	992	15	135	1796	2045
95	144	1314	2042	144	1428	2080	1	144	1546	1348	145	1655	976	16	145	1769	2028
96	154	1290	2028	154	1403	2065	2	154	1520	1332	155	1629	960	17	155	1742	2011
97	163	1266	2013	164	1378	2050	3	164	1495	1317	164	1603	943	18	165	1716	1995
98	173	1241	1998	173	1353	2034	4	174	1469	1301	174	1577	927	19	174	1689	1977
99	183	1217	1984	183	1328	2019	5	183	1444	1285	184	1550	910	20	184	1662	1960
100	192	1192	1968	192	1303	2003	6	193	1418	1269	193	1524	893	21	193	1636	1943
101	201	1168	1953	202	1278	1988	7	202	1393	1253	202	1498	876	22	203	1609	1926
102	210	1144	1938	211	1253	1971	8	211	1367	1235	212	1472	860	23	212	1582	1908
103	220	1119	1931	220	1228	1961	9	221	1342	1224	221	1446	847	24	222	1556	1891
104	229	1095	1922	230	1203	1953	10	230	1316	1213	231	1419	836	25	231	1539	1883
105	238	1070	1914	239	1178	1943	11	239	1291	1202	240	1393	823	26	240	1502	1866
106	247	1046	1906	248	1153	1933	12	248	1265	1191	249	1367	810	27	249	1475	1851
107	256	1022	1897	257	1128	1923	13	257	1240	1179	258	1341	797	28	258	1449	1833
108	266	997	1890	266	1103	1914	14	266	1214	1168	267	1315	785	29	267	1422	1822
109	274	973	1881	274	1078	1903	15	275	1189	1157	276	1288	772	30	276	1395	1810
110	283	948	1873	283	1053	1893	16	284	1163	1146	285	1262	759	31	285	1369	1793
111	291	924	1863	292	1028	1884	17	292	1138	1133	293	1236	746	1	294	1342	1781
112	300	900	1855	300	1003	1873	18	301	1112	1122	301	1210	732	2	302	1315	1766
113	308	875	1846	309	978	1863	19	309	1087	1110	310	1184	719	3	311	1289	1751
114	317	857	1837	318	953	1854	20	318	1061	1098	319	1157	707	4	320	1262	1733
115	325	826	1828	326	928	1843	21	326	1036	1086	327	1131	693	5	328	1235	1722
116	333	802	1819	334	903	1832	22	334	1010	1074	335	1105	679	6	336	1208	1707
117	341	778	1809	342	878	1821	23	342	985	1061	343	1079	665	7	344	1182	1691
118	349	753	1800	350	853	1811	24	351	959	1050	352	1053	653	8	352	1155	1677
119	356	729	1790	355	828	1797	25	356	934	1035	358	1026	637	9	368	1128	1670
120	360	704	1777	360	803	1783	26	361	908	1020	363	1000	620	10	364	1102	1644
121	364	680	1755	365	778	1770	27	366	883	1004	369	974	605	11	370	1075	1622
122	368	656	1750	370	752	1756	28	372	856	990	375	948	589	12	377	1048	1600
123	375	639	1740	377	733	1744	29	379	835	977</							

TABLE XIII.

Sunrise from 13° to 17° N. Latitude.

Day of Solar year.	Lat. 13° +1072" Long.			Lat. 14° +1008" Long.			Days of solar months.	Lat. 15° +168" Long.			Lat. 16° - 300" Long.			Lat 17° +648" Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Madras.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Nellore.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Vizianagaram.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Belgaum.	Eng. date.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Hyderabad.
			A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920
126	+396	+587	+1709	+398	+677	+1709	1	+401	+775	+938	+403	+861	+530	16	+405	+955	+1544
127	403	569	1698	405	658	1697	2	408	754	924	410	839	515	17	412	932	1528
128	409	552	1687	412	640	1686	3	414	734	910	413	818	500	18	419	909	1512
129	416	535	1677	418	621	1673	4	421	714	897	423	796	485	19	425	886	1495
130	422	518	1666	425	602	1661	5	427	694	883	430	774	470	20	432	862	1478
131	428	500	1654	431	584	1649	6	433	673	868	436	753	445	21	438	839	1461
132	434	483	1642	437	565	1637	7	439	653	855	442	731	438	22	444	816	1444
133	440	466	1644	443	546	1637	8	446	633	854	448	709	434	23	451	793	1440
134	446	448	1645	449	528	1637	9	451	612	851	454	688	431	24	457	770	1434
135	452	431	1647	454	509	1635	10	457	592	849	460	666	427	25	462	746	1428
136	457	414	1647	460	490	1635	11	463	572	847	465	644	423	26	468	723	1423
137	462	396	1648	465	471	1634	12	468	551	844	471	622	419	27	474	700	1417
138	468	379	1650	471	453	1634	13	474	531	842	476	601	415	28	479	677	1411
139	473	362	1650	476	434	1633	14	479	511	839	482	579	411	29	485	654	1406
140	478	345	1651	481	415	1631	15	484	491	836	487	557	407	30	489	630	1399
141	483	327	1651	486	397	1630	16	489	470	833	492	536	402	31	494	607	1392
142	488	310	1652	491	378	1629	17	494	450	830	496	514	397	1	499	584	1386
143	492	293	1652	495	359	1627	18	498	430	826	501	492	392	2	504	561	1380
144	497	275	1652	500	341	1626	19	503	409	823	506	471	388	3	509	538	1373
145	501	258	1652	504	322	1623	20	507	389	819	510	449	382	4	514	513	1367
146	505	241	1651	508	303	1621	21	511	369	815	514	427	371	5	517	491	1359
147	509	223	1651	512	284	1619	22	516	348	812	518	405	371	6	521	468	1351
148	513	206	1651	517	266	1618	23	520	328	808	523	384	367	7	526	445	1345
149	517	189	1650	520	247	1615	24	523	308	803	526	362	360	8	529	422	1337
150	520	172	1649	524	228	1612	25	527	288	799	530	340	355	9	533	398	1330
151	523	154	1647	527	210	1609	26	530	267	794	533	319	348	10	536	375	1321
152	501	136	1621	505	192	1581	27	508	248	764	512	296	318	11	516	352	1290
153	504	132	1620	508	186	1578	28	512	240	760	515	286	311	12	519	341	1282
154	507	127	1618	511	180	1575	29	515	232	755	518	277	305	13	522	329	1273
155	510	123	1617	514	173	1571	30	518	224	750	527	267	304	14	525	318	1265
156	512	118	1614	516	167	1567	31	520	216	744	523	258	291	15	527	307	1256
157	514	114	1612	518	161	1563	1	522	208	738	525	248	283	16	529	295	1246
158	517	110	1611	521	155	1560	2	525	200	733	528	239	277	17	532	284	1238
159	519	105	1608	523	149	1556	3	527	192	727	530	229	269	18	534	273	1229
160	521	101	1606	525	142	1551	4	529	184	721	532	220	262	19	536	262	1220
161	523	96	1603	527	136	1547	5	531	176	715	534	210	254	20	538	250	1210
162	524	92	1600	528	130	1542	6	532	168	708	535	201	246	21	539	239	1200
163	525	88	1597	529	124	1537	7	533	160	701	537	191	237	22	541	228	1189
164	527	83	1595	531	118	1533	8	535	152	695	538	182	228	23	543	216	1179
165	528	79	1591	532	111	1527	9	536	144	687	539	172	219	24	543	205	1168
166	528	74	1588	532	105	1521	10	536	136	679	540	163	210	25	544	194	1157
167	529	70	1584	533	99	1515	11	536	128	671	541	153	201	26	545	182	1146
168	530	66	1580	534	93	1510	12	538	120	665	542	144	193	27	546	171	1136
169	531	61	1576	535	87	1505	13	539	112	657	542	134	183	28	547	160	1125
170	531	57	1572	535	80	1498	14	539	104	649	543	125	174	29	547	149	1113
171	531	52	1567	536	74	1493	15	540	96	642	543	115	164	30	547	137	1101
172	531	48	1563	536	68	1486	16	540	88	633	543	106	154	1	547	126	1090
173	531	44	1558	536	62	1480	17	540	80	625	543	96	144	2	547	115	1078
174	531	39	1554	535	56	1473	18	539	72	616	543	87	134	3	547	103	1066
175	531	35	1549	535	49	1466	19	539	64	608	542	77	123	4	547	92	1055
176	531	30	1545	535	43	1460	20	539	56	599	542	68	113	5	546	81	1042
177	530	26	1539	534	37	1452	21	538	48	590	541	58	102	6	545	69	1029
178	529	22	1534	533	31	1445	22	537	40	581	540	49	92	7	544	58	1017
179	528	17	1528	532	25	1438	23	536	32	571	539	39	81	8	543	47	1004
180	527	13	1523	531	18	1430	24	535	24	562	538	30	70	9	543	36	992
181	525	8	1516	529	12	1422	25	533	16	552	536	20	58	10	541	24	978
182	524	4	1511	528	8	1414	26	532	8	542	535	11	47	11	540	13	966
183	522	0	1504	526	0	1406	27	530	0	532	534	0	36	12	538	0	952
184	521	— 4	1499	525	— 6	1399	28	529	— 8	523	533	— 10	25	13	537	— 12	939
185	519	9	1492	523	13	1390	29	527	17	512	531	20	13	14	535	23	926
186	517	13	1486	521	19	1382	30	525	25	502	529	30	1	15	533	35	912

Bengal, Bhadrapada.

Tamil, Avani; Malayalam, Chingam; Bengali, Asvina.

Tamil, Purattasi; Malayalam, Kanni; Bengali, Asvina.

August

September

October

TABLE XIII.

Sunrise from 13° to 17° N. Latitude.

Day of Solar year.	Lat. 13° +1072" Long.			Lat. 14° +1008" Long.			Days of solar months.	Lat. 15° +168" Long.			Lat. 16° +300" Long.			Eng. date.	Lat. 17° +648" Long.		
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Madras.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Nellore.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Vizianagaram.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Belgaum.		Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Hyderabad.
		A.D. 1840— 1920			A.D. 1840— 1920			A.D. 1840— 1920		A.D. 1840— 1920		A.D. 1840— 1920		A.D. 1840— 1920		A.D. 1840— 1920	
187	+515	-18	+1479	+519	-26	+1373	1	+523	-33	+492	+527	-40	-11	16	+531	-47	+896
188	513	22	1473	517	32	1365	2	521	41	482	525	49	22	17	529	58	885
189	510	27	1465	514	38	1356	3	518	50	470	522	59	35	18	526	70	870
190	507	31	1458	511	45	1346	4	515	58	459	519	69	48	19	523	82	855
191	504	36	1450	508	51	1337	5	512	66	448	516	79	61	20	520	94	840
192	501	40	1443	505	58	1327	6	509	75	436	513	89	74	21	517	105	826
193	498	45	1434	502	64	1318	7	506	83	426	510	99	86	22	514	117	810
194	495	49	1414	499	70	1296	8	503	91	403	507	109	111	23	511	129	784
195	492	54	1393	496	77	1275	9	500	99	379	504	119	135	24	508	140	758
196	488	58	1372	492	83	1252	10	496	108	355	500	129	161	25	504	152	730
October																	
197	484	63	1351	488	90	1229	11	492	116	331	496	139	187	26	500	164	703
198	480	67	1330	484	96	1207	12	488	124	307	492	148	212	27	496	175	676
199	476	72	1308	480	102	1184	13	484	133	282	488	158	238	28	492	187	649
200	472	76	1287	476	109	1161	14	479	141	257	483	163	265	29	487	199	621
201	468	81	1266	472	115	1138	15	475	149	233	479	178	291	30	483	211	593
202	464	85	1244	468	122	1116	16	471	158	208	475	188	316	31	479	222	566
203	459	90	1222	463	128	1092	17	466	166	183	470	198	343	1	474	234	538
204	454	94	1200	458	134	1068	18	461	174	158	465	208	370	2	469	246	510
205	450	99	1178	454	141	1046	19	456	183	132	460	218	396	3	464	257	482
206	445	103	1156	449	147	1022	20	451	191	112	455	228	423	4	459	269	453
November																	
207	441	108	1135	445	154	999	21	447	199	83	451	238	449	5	455	281	426
208	436	112	1113	440	160	976	22	442	207	58	446	247	475	6	450	292	398
209	430	117	1089	434	166	951	23	436	216	31	440	257	503	7	444	304	369
210	425	121	1067	429	173	927	24	431	224	6	433	267	532	8	439	316	341
211	417	126	1042	423	179	902	25	425	232	— 20	429	277	556	9	433	328	311
212	411	130	1018	417	186	878	26	419	241	47	423	287	585	10	427	339	282
213	428	136	1018	431	192	873	27	433	248	53	436	296	594	11	438	352	270
214	422	153	995	425	211	848	28	427	268	79	430	318	622	12	432	375	241
215	415	171	970	418	229	823	29	420	289	107	423	339	650	13	425	398	211
216	408	188	946	411	248	797	30	413	309	134	416	361	679	14	418	422	180
December																	
217	401	205	922	404	267	771	1	406	329	161	409	383	708	15	411	445	150
218	394	222	906	397	285	746	2	399	349	188	402	404	736	16	404	468	120
219	387	240	873	390	304	720	3	392	370	216	395	426	765	17	397	491	90
220	380	257	849	383	323	692	4	385	390	243	388	448	794	18	390	514	60
221	373	274	825	376	342	668	5	378	410	270	381	470	823	19	383	538	29
222	366	292	800	369	360	643	6	371	431	298	374	491	851	20	376	561	— 1
223	359	309	775	362	379	618	7	364	451	324	367	513	881	21	369	584	31
224	352	326	744	354	398	585	8	356	471	357	359	535	915	22	361	607	66
225	345	344	712	346	416	552	9	348	492	391	351	556	949	23	353	630	100
226	338	361	681	338	435	519	10	340	512	424	343	578	984	24	345	654	135
January																	
227	330	378	648	330	454	486	11	332	532	458	335	600	1018	25	337	677	170
228	323	395	617	322	472	453	12	324	552	491	327	621	1052	26	329	700	204
229	315	413	585	314	491	420	13	316	573	525	319	643	1086	27	321	723	239
230	307	430	552	306	510	387	14	307	593	559	310	665	1121	28	312	746	275
231	299	447	520	298	529	354	15	299	613	593	302	687	1156	29	304	770	310
232	291	465	487	290	547	321	16	291	634	626	294	708	1190	30	296	793	344
233	283	482	455	282	566	288	17	283	654	660	286	730	1224	1	288	816	379
234	274	499	422	273	585	254	18	274	674	694	277	752	1259	2	279	839	415
235	266	517	389	265	603	221	19	265	695	729	268	773	1294	3	270	862	450
236	258	534	357	257	622	188	20	256	715	763	259	795	1330	4	261	886	486
February																	
237	250	551	324	249	641	155	21	247	735	798	250	817	1365	5	252	909	522
238	241	568	291	240	659	121	22	238	755	832	241	838	1400	6	243	932	557
239	232	586	258	231	678	87	23	229	776	867	232	860	1435	7	234	955	593
240	224	603	225	223	699	54	24	220	796	901	223	882	1470	8	225	978	629
241	215	620	192	214	716	20	25	211	816	936	213	904	1507	9	215	1002	666
242	206	638	158	205	734	— 14	26	202	837	970	204	925	1542	10	206	1025	701
243	200	656	128	200	752	44	27	201	856	997	201	948	1571	11	202	1048	732
244	191	680	95	191	777	78	28	192	881	1031	192	974	1606	12	193	1075	768
245	181	705	60	181	802	113	29	182	907	1067	182	1000	1642	13	183	1101	804
246	171	729	26	171	827	148	30	172	932	1102	172	1027	1679	14	173	1128	841

Bengal, Kartika.

Tamil, Aippasi; Malayalam, Tulam; Bengali, Margasira.

Tamil, Kartikai; Malayalam, Vrischikam; Bengali, Margasira.

October

November

December

TABLE XIII.

Sunrise from 13° to 17° N. Latitude.

Day of Solar year.	Lat. 13° +1072'' Long.			Lat. 14° +1008'' Long.			Days of solar months.	Lat. 15° +168'' Long.			Lat. 16° -300'' Long.			Eng. date.	Lat. 17° +648'' Long.		
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Madras.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Nellore.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Vizianagaram.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Belgaum.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Hyderabad.
			A.D. 1840— 1920			A.D. 1840— 1920				A.D. 840— 1920			A.D. 1840— 1920				A.D. 1840— 1920
247	+161	-754	9	+161	-852	-183	1	+162	-958	-1138	+162	-1053	-1715	15	+163	-1155	-878
248	151	778	43	151	877	218	2	152	983	1173	152	1079	1751	16	153	1181	914
249	141	802	77	141	902	253	3	142	1009	1209	142	1105	1787	17	143	1208	951
250	131	827	112	131	927	288	4	132	1034	1244	132	1131	1823	18	133	1235	988
251	121	851	146	121	952	323	5	122	1060	1280	122	1158	1860	19	123	1262	1025
252	111	876	181	111	977	358	6	112	1085	1315	112	1184	1896	20	113	1288	1061
253	101	900	215	101	1002	393	7	102	1111	1351	102	1210	1932	21	103	1315	1098
254	91	924	249	91	1027	429	8	92	1136	1388	92	1236	1968	22	93	1342	1135
255	81	949	270	81	1052	449	9	82	1162	1408	82	1262	1987	23	83	1368	1153
256	71	973	291	71	1077	469	10	72	1187	1427	72	1289	2006	24	73	1395	1172
257	61	998	311	61	1102	489	11	62	1213	1447	62	1315	2025	25	63	1422	1190
258	51	1022	332	51	1127	509	12	52	1238	1466	52	1341	2044	26	53	1448	1209
259	41	1046	353	41	1152	529	13	42	1264	1486	42	1367	2062	27	43	1475	1227
260	31	1071	374	31	1177	550	14	32	1289	1506	32	1393	2081	28	33	1502	1245
261	21	1095	395	21	1202	570	15	22	1315	1525	22	1420	2100	29	23	1529	1264
262	11	1120	415	11	1227	590	16	12	1340	1545	12	1446	2119	30	13	1555	1282
263	2	1144	436	2	1252	610	17	2	1366	1564	2	1472	2138	31	2	1582	1301
264	-10	1168	457	-10	1277	630	18	-10	1391	1586	-10	1498	2159	1	-10	1609	1323
265	20	1193	478	20	1302	650	19	20	1417	1606	20	1524	2178	2	20	1635	1341
266	29	1217	499	29	1327	670	20	30	1442	1625	30	1551	2197	3	31	1662	1362
267	38	1242	518	38	1352	689	21	39	1468	1644	39	1577	2215	4	40	1689	1377
268	48	1266	539	48	1377	709	22	49	1493	1663	49	1603	2234	5	50	1715	1396
269	58	1290	560	58	1402	729	23	59	1519	1683	59	1629	2252	6	60	1742	1414
270	67	1315	580	67	1427	749	24	68	1544	1702	68	1655	2270	7	69	1769	1431
271	78	1339	602	78	1452	770	25	78	1570	1722	79	1682	2290	8	80	1796	1451
272	88	1364	622	88	1477	790	26	89	1595	1742	89	1708	2309	9	90	1822	1469
273	98	1388	643	98	1502	810	27	99	1621	1761	99	1734	2328	10	100	1849	1488
274	103	1412	659	103	1528	825	28	103	1648	1775	103	1760	2341	11	102	1876	1498
275	110	1423	677	110	1538	842	29	109	1658	1791	110	1769	2357	12	109	1884	1513
276	117	1434	695	117	1548	859	1	116	1667	1807	117	1778	2373	13	116	1893	1529
277	124	1444	712	124	1558	876	2	122	1677	1823	124	1787	2389	14	123	1901	1544
278	131	1455	730	131	1568	893	3	129	1686	1839	131	1796	2405	15	130	1910	1560
279	138	1466	748	139	1578	911	4	135	1696	1855	138	1804	2420	16	137	1918	1575
280	145	1477	766	146	1589	929	5	142	1706	1872	145	1813	2436	17	144	1926	1590
281	152	1488	784	153	1599	946	6	148	1715	1887	152	1822	2452	18	151	1935	1606
282	159	1498	801	160	1609	963	7	155	1725	1904	159	1831	2468	19	158	1943	1621
283	166	1509	819	167	1619	980	8	161	1734	1919	166	1840	2484	20	165	1952	1637
284	173	1520	837	175	1629	999	9	168	1744	1936	173	1849	2501	21	172	1960	1652
285	180	1531	826	182	1639	987	10	174	1754	1921	180	1858	2486	22	179	1968	1635
286	187	1542	815	189	1649	974	11	181	1763	1907	187	1867	2470	23	186	1979	1619
287	194	1552	804	196	1659	960	12	187	1773	1893	194	1876	2455	24	193	1985	1602
288	201	1563	793	203	1669	950	13	194	1782	1879	201	1885	2440	25	200	1994	1585
289	208	1574	781	211	1679	938	14	200	1792	1864	208	1893	2424	26	207	2002	1568
290	215	1585	770	218	1690	928	15	207	1802	1850	215	1902	2409	27	214	2010	1552
291	222	1596	759	225	1700	914	16	213	1811	1835	222	1911	2394	28	221	2019	1535
292	229	1606	748	232	1710	902	17	220	1821	1822	229	1920	2379	29	228	2027	1518
293	236	1617	737	239	1720	889	18	227	1830	1808	236	1929	2363	30	235	2036	1502
294	243	1628	726	247	1730	878	19	235	1840	1795	243	1938	2348	31	242	2044	1485
295	250	1639	715	254	1740	866	20	242	1850	1781	249	1947	2332	1	248	2052	1467
296	257	1650	704	261	1750	853	21	249	1859	1767	256	1956	2316	2	255	2061	1451
297	264	1660	693	268	1760	841	22	257	1869	1755	262	1965	2300	3	261	2069	1433
298	271	1671	682	275	1770	829	23	264	1878	1741	269	1974	2285	4	268	2078	1416
299	278	1682	670	283	1780	817	24	272	1888	1728	276	1982	2269	5	274	2086	1398
300	285	1693	659	290	1791	805	25	279	1898	1714	282	1991	2253	6	280	2094	1381
301	292	1704	648	297	1801	793	26	287	1907	1701	289	2000	2238	7	286	2103	1364
302	299	1714	637	304	1811	781	27	294	1917	1688	295	2009	2222	8	293	2111	1363
303	307	1725	627	311	1821	768	28	302	1926	1675	302	2018	2206	9	300	2120	1330
304	315	1736	617	319	1832	757	29	310	1936	1662	308	2028	2190	10	306	2128	1312
305	318	1718	602	322	1813	741	30	313	1915	1644	311	2006	2171	11	309	2104	1291

TABLE XIII.

Sunrise from 13° to 17° N. Latitude.

Day of Solar year.	Lat. 13° +1072" Long.			Lat. 14° +1008" Long.			Days of solar months.	Lat. 15° +168" Long.			Lat. 16° -300" Long.			Eng. date.	Lat. 17° +64" Long.		
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Madras.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Nellore.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Vizianagaram.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Belgaum.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Hyderabad
			A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920
306	-321	-1700	-587	-325	-1793	-724	1	-316	-1894	-1626	-314	-1983	-2151	12	-312	-2081	-127
307	324	1682	572	328	1774	708	2	319	1874	1604	317	1961	2132	13	315	2057	125
308	327	1664	557	331	1755	692	3	322	1853	1591	320	1939	2113	14	318	2033	122
309	330	1645	541	334	1735	675	4	325	1832	1571	323	1916	2093	15	321	2009	119
310	333	1627	526	337	1716	659	5	328	1811	1555	326	1894	2074	16	324	1986	116
311	336	1609	511	340	1697	643	6	331	1790	1539	329	1872	2055	17	327	1962	113
312	339	1591	496	343	1678	727	7	334	1770	1520	332	1850	2036	18	330	1938	110
313	342	1573	481	346	1658	610	8	337	1749	1501	334	1827	2015	19	333	1915	107
314	345	1555	466	349	1639	594	9	340	1728	1548	337	1805	1996	20	336	1891	104
315	348	1537	452	352	1620	576	10	343	1707	1467	340	1783	1976	21	339	1867	101
316	351	1519	416	355	1600	538	11	346	1686	1427	343	1760	1934	22	342	1844	97
317	354	1501	380	358	1581	500	12	349	1666	1387	346	1738	1893	23	345	1820	94
318	357	1483	343	361	1562	462	13	352	1645	1347	349	1716	1851	24	348	1796	91
319	360	1464	307	364	1542	424	14	355	1624	1307	352	1693	1810	25	351	1772	88
320	363	1446	271	367	1523	386	15	358	1603	1267	355	1671	1768	26	354	1749	85
321	366	1428	235	370	1504	348	16	361	1582	1227	358	1649	1727	27	357	1725	82
322	369	1410	199	373	1485	310	17	364	1562	1187	361	1627	1685	28	360	1701	79
323	372	1392	162	376	1465	272	18	367	1541	1147	364	1604	1644	1	364	1678	73
324	375	1374	126	380	1446	235	19	370	1520	1107	367	1582	1602	2	367	1654	69
325	378	1356	90	383	1427	197	20	373	1499	1067	370	1560	1561	3	370	1630	65
326	381	1338	54	386	1407	159	21	376	1478	1027	373	1537	1539	4	374	1607	60
327	384	1320	18	389	1388	121	22	379	1458	987	376	1515	1478	5	377	1583	56
328	387	1302	+ 19	392	1369	83	23	382	1437	947	379	1493	1436	6	380	1559	52
329	390	1283	57	395	1349	45	24	385	1416	907	382	1470	1395	7	383	1535	47
330	393	1265	91	398	1330	7	25	388	1395	867	385	1448	1353	8	386	1512	43
331	396	1247	127	401	1311	+ 31	26	391	1374	827	388	1426	1312	9	389	1488	39
332	400	1229	162	404	1292	69	27	394	1354	788	391	1404	1270	10	392	1464	34
333	404	1211	198	406	1272	108	28	398	1333	748	395	1381	1230	11	395	1441	30
334	408	1193	235	408	1253	147	29	402	1312	710	399	1359	1179	12	397	1417	25
335	413	1176	267	410	1232	186	1	406	1292	670	402	1336	1148	13	399	1392	21
336	413	1137	302	411	1191	224	2	407	1249	628	403	1291	1104	14	400	1346	17
337	414	1098	338	411	1150	261	3	407	1206	585	403	1247	1060	15	400	1299	12
338	414	1058	374	412	1109	299	4	408	1163	543	404	1202	1016	16	401	1253	7
339	415	1019	410	412	1068	336	5	408	1120	500	404	1158	981	17	401	1206	3
340	415	980	445	413	1027	374	6	409	1077	458	405	1113	928	18	402	1160	+ 0
341	416	941	481	413	986	411	7	409	1034	415	405	1069	884	19	402	1114	60
342	416	902	518	414	945	451	8	410	991	373	406	1024	840	20	403	1067	106
343	417	862	554	414	904	488	9	410	948	330	406	980	795	21	403	1021	143
344	417	823	591	415	863	530	10	411	905	286	407	935	752	22	404	974	198
345	418	784	630	416	822	570	11	411	862	243	407	891	707	23	404	928	244
346	418	745	667	416	781	609	12	412	819	201	408	846	663	24	405	882	289
347	419	706	705	417	740	649	13	412	776	158	408	802	619	25	405	835	336
348	419	666	743	417	699	688	14	413	733	116	409	757	576	26	406	789	381
349	420	627	781	418	658	728	15	413	690	73	409	713	531	27	406	742	428
350	420	588	818	418	617	767	16	414	647	31	410	668	488	28	407	696	473
351	421	549	858	419	576	809	17	414	604	+ 12	410	624	443	29	407	650	519
352	421	510	895	419	535	848	18	415	561	54	411	579	400	30	408	603	555
353	422	470	936	420	494	890	19	416	518	96	411	535	360	31	408	557	611
354	422	431	971	420	453	929	20	416	475	139	412	490	317	1	409	510	657
355	423	392	1011	421	412	973	21	417	432	181	413	446	273	2	409	464	703
356	423	353	1051	422	371	1015	22	418	389	223	413	401	229	3	410	418	748
357	424	314	1093	422	330	1058	23	418	346	266	414	357	185	4	410	371	795
358	424	274	1132	423	289	1100	24	419	303	308	414	312	141	5	411	325	840
359	425	235	1172	424	248	1142	25	419	260	351	415	268	97	6	412	278	886
360	426	196	1211	424	207	1185	26	420	217	393	416	223	54	7	413	232	931
361	427	157	1255	425	166	1227	27	421	174	435	417	179	10	8	414	186	977
362	428	118	1297	426	125	1271	28	422	131	477	418	134	+ 33	9	415	139	1023
363	429	79	1337	427	84	1313	29	423	88	519	419	89	77	10	416	92	1068
364	430	40	1379	428	41	1357	30	424	43	561	420	49	120	11	417	46	1114
365	432	0	1420	429	0	1399	31	425	0	603	421	10	164	12	418	00	1159

TABLE XIII.

Sunrise from 18° to 22° N. Latitude.

Solar year.	Lat. 18° - 428" Long.			Lat. 19° - 460" Long.			Days of solar months.	Lat. 20° - 476" Long.			Lat. 21° + 800" Long.			Eng. date.	Lat. 22° - 616" Long.		
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Satara.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Poona.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Nasik.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Nagpur.		Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Baroda.
	A.D. 1840—1920			A.D. 1840—1920				A.D. 1840—1920			A.D. 1840—1920				A.D. 1840—1920		
1	-409	+ 48	+177	-405	+ 50	+185	1	-401	+ 52	+222	-397	+ 54	+1534	13	-393	+ 56	+160
2	407	96	227	403	100	237	2	399	104	277	395	107	1590	14	391	111	218
3	405	144	277	401	150	289	3	398	156	330	393	161	1646	15	389	167	276
4	404	193	327	400	200	340	4	396	208	384	392	215	1701	16	388	223	332
5	402	241	377	398	250	392	5	394	259	437	390	269	1757	17	386	278	390
6	400	289	427	396	300	444	6	392	311	491	388	323	1813	18	384	334	448
7	398	338	468	394	350	496	7	390	363	545	386	377	1869	19	382	390	505
8	396	386	528	392	400	548	8	388	425	599	384	431	1925	20	380	445	563
9	393	434	532	390	450	600	9	386	477	653	382	485	1981	21	375	501	621
10	391	483	629	387	500	653	10	383	529	697	379	539	2037	22	375	557	681
11	388	531	657	385	550	682	11	381	580	727	377	592	2069	23	373	612	714
12	386	579	684	382	600	711	12	378	632	758	374	646	2101	24	371	668	747
13	383	627	713	380	650	740	13	376	684	788	372	700	2133	25	368	724	782
14	380	676	741	377	700	770	14	373	736	819	369	754	2166	26	365	779	816
15	377	724	769	374	750	800	15	370	788	850	366	808	2198	27	362	835	850
16	374	772	797	371	800	829	16	367	840	882	363	862	2231	28	359	891	884
17	371	821	825	367	850	860	17	364	892	913	360	916	2264	29	356	946	918
18	367	869	855	364	900	890	18	361	944	944	357	970	2297	30	353	1002	953
19	364	917	883	361	950	919	19	357	996	976	353	1024	2330	1	350	1058	987
20	360	966	902	357	1000	950	20	354	1048	1007	350	1078	2363	2	346	1114	1022
21	357	1014	940	354	1050	980	21	350	1099	1039	346	1131	2397	3	343	1169	1056
22	353	1062	969	350	1100	1010	22	346	1152	1071	343	1185	2429	4	339	1225	1091
23	349	1110	999	346	1150	1041	23	342	1204	1103	339	1239	2463	5	335	1281	1127
24	346	1159	1027	342	1200	1072	24	339	1256	1134	335	1293	2497	6	332	1336	1161
25	341	1207	1057	338	1250	1102	25	335	1307	1166	331	1347	2530	7	328	1392	1196
26	337	1255	1086	334	1300	1133	26	331	1359	1199	327	1401	2564	8	324	1448	1231
27	333	1304	1115	330	1350	1164	27	327	1411	1231	323	1455	2598	9	320	1503	1266
28	329	1352	1145	326	1400	1195	28	323	1463	1263	319	1509	2632	10	316	1559	1302
29	324	1400	1175	322	1450	1225	29	318	1515	1296	315	1563	2665	11	312	1615	1337
30	357	1448	1167	354	1500	1220	30	352	1556	1290	349	1616	2661	12	346	1672	1334
31	352	1473	1197	349	1527	1252	1	347	1584	1323	344	1646	2696	13	342	1703	1369
32	346	1498	1228	344	1553	1283	2	342	1612	1356	339	1675	2730	14	336	1734	1406
33	341	1524	1259	339	1580	1315	3	336	1640	1390	334	1705	2765	15	331	1766	1442
34	336	1549	1289	333	1607	1348	4	331	1668	1423	328	1735	2801	16	326	1797	1479
35	330	1574	1320	328	1634	1379	5	325	1696	1457	323	1764	2835	17	320	1828	1516
36	324	1599	1351	322	1660	1412	6	320	1725	1491	317	1794	2871	18	315	1859	1552
37	319	1624	1381	316	1687	1445	7	314	1753	1525	312	1824	2906	19	309	1890	1589
38	313	1650	1413	311	1714	1477	8	309	1781	1558	306	1854	2942	20	304	1922	1626
39	307	1675	1444	305	1740	1509	9	303	1809	1592	300	1883	2977	21	298	1953	1663
40	301	1700	1475	299	1767	1542	10	296	1837	1627	294	1913	3013	22	292	1984	1700
41	295	1725	1505	293	1794	1575	11	291	1865	1661	288	1943	3048	23	286	2015	1738
42	288	1750	1504	286	1820	1575	12	284	1893	1662	282	1972	3048	24	280	2046	1739
43	282	1776	1503	280	1847	1574	13	278	1921	1661	276	2002	3048	25	274	2078	1740
44	276	1801	1501	274	1874	1572	14	272	1949	1661	270	2032	3048	26	268	2109	1740
45	270	1826	1499	267	1900	1573	15	265	1977	1661	263	2061	3049	27	261	2140	1742
46	263	1851	1499	261	1927	1571	16	259	2006	1661	257	2091	3049	28	255	2171	1743
47	256	1876	1498	254	1954	1571	17	252	2034	1662	250	2121	3051	29	248	2202	1745
48	249	1902	1498	247	1981	1571	18	246	2062	1662	244	2151	3051	30	242	2234	1746
49	243	1927	1496	241	2007	1570	19	239	2090	1662	237	2180	3052	31	236	2265	1746
50	236	1952	1496	234	2034	1570	20	232	2118	1662	230	2210	3053	1	229	2296	1748
51	229	1977	1495	227	2061	1570	21	226	2146	1662	224	2240	3053	2	222	2327	1750
52	222	2002	1494	220	2087	1570	22	219	2174	1663	217	2269	3054	3	215	2358	1752
53	214	2028	1495	213	2114	1570	23	211	2202	1664	210	2299	3055	4	208	2390	1754
54	207	2053	1494	206	2141	1570	24	204	2230	1665	203	2329	3056	5	201	2421	1755
55	200	2078	1494	199	2167	1568	25	197	2258	1665	196	2358	3057	6	194	2452	1757
56	193	2103	1493	192	2194	1569	26	190	2287	1666	189	2388	3058	7	187	2483	1759
57	185	2128	1493	184	2221	1570	27	183	2315	1667	181	2418	3061	8	180	2514	1761
58	178	2154	1493	177	2248	1570	28	175	2343	1668	174	2448	3062	9	173	2546	1763
59	170	2179	1493	169	2274	1571	29	168	2371	1669	167	2477	3063	10	165	2577	1765
60	163	2204	1493	162	2301	1571	30	161	2399	1669	159	2507	3065	11	158	2608	1767
61	180	2228	1468	179	2328	1547	31	179	2428	1645	179	2536	3039	12	178	2640	1742
62	171	2220	1487	171	2321	1548	32	170	2422	1648	170	2530	3042	13	169	2635	1746

TABLE XIII.

Sunrise from 18° to 22° N. Latitude.

Day of Solar year.	Lat. 18° - 428" Long.			Lat. 19° - 460" Long.			Days of solar months.	Lat. 20° - 476" Long.			Lat. 21° + 400" Long.			Eng. date.	Lat. 22° - 600" Long.		
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Satara.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Poona.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Nasik.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Nagpur.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds.
	A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920		
63	-162	+2213	+1471	-162	+2384	+1550	1	-162	+2415	+1649	-161	+2524	+3045	14	-161	+2630	+
64	153	2205	1472	153	2306	1552	2	153	2409	1652	152	2518	3048	15	152	2624	1
65	145	2198	1473	144	2300	1554	3	144	2402	1654	144	2512	3050	16	143	2619	1
66	135	2190	1475	135	2292	1555	4	135	2396	1657	135	2500	3053	17	134	2614	1
67	126	2182	1476	126	2285	1557	5	126	2390	1660	126	2501	3057	18	125	2609	1
68	117	2175	1478	117	2278	1559	6	117	2383	1662	117	2495	3060	19	116	2604	1
69	108	2167	1479	108	2271	1561	7	107	2377	1666	107	2489	3064	20	107	2598	1
70	99	2160	1481	99	2264	1563	8	98	2370	1668	98	2483	3067	21	98	2593	1
71	90	2152	1482	89	2257	1567	9	89	2364	1671	89	2477	3071	22	89	2588	1
72	80	2144	1464	80	2250	1548	10	80	2358	1651	80	2471	3051	23	79	2583	1
June																	
73	71	2137	1446	71	2243	1529	11	71	2351	1632	70	2465	3032	24	70	2578	1
74	62	2129	1427	61	2236	1517	12	61	2345	1613	61	2459	3011	25	61	2572	1
75	53	2122	1409	53	2227	1491	13	53	2338	1593	53	2453	2990	26	53	2567	1
76	43	2114	1391	42	2221	1474	14	42	2332	1575	42	2447	2972	27	42	2562	1
77	33	2106	1374	33	2214	1455	15	33	2326	1555	33	2442	2952	28	33	2557	1
78	24	2099	1355	24	2207	1436	16	24	2319	1536	24	2436	2932	29	24	2552	1
79	15	2091	1337	15	2200	1417	17	15	2313	1516	15	2430	2911	30	15	2546	1
80	5	2084	1319	5	2193	1399	18	5	2306	1498	5	2424	2892	1	5	2541	1
81	+ 4	2076	1301	+ 4	2186	1380	19	+ 4	2300	1478	+ 4	2418	2872	2	+ 4	2536	1
82	14	2086	1283	13	2179	1361	20	13	2294	1458	13	2412	2852	3	13	2531	1
83	23	2061	1265	23	2172	1343	21	23	2287	1440	23	2406	2833	4	23	2526	1
84	33	2053	1247	32	2165	1324	22	32	2281	1420	32	2400	2812	5	32	2520	1
85	42	2046	1229	42	2158	1306	23	42	2274	1402	42	2394	2793	6	42	2515	1
86	51	2038	1210	51	2150	1287	24	51	2268	1382	51	2388	2773	7	51	2510	1
87	60	2030	1192	60	2143	1268	25	60	2262	1362	60	2383	2753	8	60	2505	1
88	70	2023	1174	70	2136	1250	26	70	2255	1344	69	2377	2733	9	69	2500	1
89	79	2015	1156	79	2129	1239	27	79	2249	1324	79	2371	2713	10	79	2494	1
90	88	2008	1137	88	2122	1212	28	88	2242	1305	88	2365	2693	11	88	2489	1
91	106	2000	1128	106	2116	1202	29	106	2236	1294	107	2360	2683	12	107	2484	1
92	116	1972	1110	116	2088	1184	30	117	2207	1276	117	2331	2664	13	117	2454	1
93	126	1945	1093	126	2060	1166	31	126	2179	1257	127	2302	2645	14	127	2424	1
94	136	1917	1075	136	2038	1148	32	136	2150	1238	137	2272	2625	15	137	2395	1
95	146	1890	1058	146	2004	1130	1	146	2122	1220	146	2243	2605	16	147	2365	1
96	155	1862	1039	156	1976	1112	2	156	2093	1201	156	2214	2586	17	157	2335	1
97	165	1835	1022	166	1948	1094	3	166	2064	1182	166	2185	2567	18	167	2305	1
98	175	1807	1004	175	1920	1075	4	176	2036	1164	176	2156	2548	19	177	2275	1
99	185	1780	987	185	1892	1057	5	186	2007	1145	186	2126	2528	20	187	2246	1
100	194	1752	968	194	1864	1038	6	195	1979	1126	195	2097	2508	21	196	2216	1
101	203	1725	950	204	1836	1020	7	204	1950	1106	205	2068	2489	22	205	2186	1
102	213	1697	933	203	1808	1001	8	214	1921	1086	214	2039	2470	23	215	2156	1
103	222	1670	917	223	1780	985	9	223	1893	1067	224	2010	2447	24	224	2126	1
104	232	1642	903	232	1752	967	10	233	1864	1050	233	1980	2430	25	234	2097	1
105	241	1615	887	242	1724	951	11	242	1836	1021	243	1951	2411	26	243	2067	1
106	250	1587	871	251	1696	934	12	251	1867	1012	252	1922	2391	27	253	2037	1
107	259	1560	855	260	1668	916	13	260	1778	993	261	1893	2370	28	261	2007	1
108	268	1532	840	269	1640	899	14	269	1750	975	270	1864	2350	29	271	1977	1
109	277	1505	825	278	1620	882	15	278	1721	956	279	1834	2330	30	280	1948	1
110	286	1477	808	287	1584	865	16	287	1693	937	288	1805	2310	31	289	1918	1
111	294	1450	792	295	1556	846	17	296	1664	919	296	1776	2288	1	297	1888	9
112	303	1422	778	304	1528	829	18	305	1635	900	305	1747	2267	2	306	1858	9
113	312	1395	762	312	1500	811	19	313	1607	880	314	1718	2248	3	315	1828	9
114	321	1367	745	321	1472	793	20	322	1578	862	323	1688	2227	4	324	1799	8
115	329	1340	728	329	1444	775	21	330	1550	842	331	1659	2206	5	332	1769	8
116	337	1312	711	338	1416	758	22	339	1521	823	339	1630	2185	6	340	1739	8
117	345	1285	694	346	1388	739	23	346	1492	802	347	1601	2163	7	348	1709	8
118	353	1257	678	354	1360	721	24	354	1464	784	356	1572	2143	8	357	1679	8
119	361	1230	661	362	1332	703	25	362	1435	763	363	1542	2121	9	364	1650	7
120	369	1202	644	369	1304	684	26	370	1407	743	371	1513	2100	10	372	1620	7
121	371	1175	622	373	1276	661	27	375	1378	721	377	1484	2076	11	379	1590	7
122	379	1148	605	381	1248	643	28	383	1348	701	385	1456	2055	12	387	1560	7
123	386	1123	587	388	1222	624	29	390	1320	680	393	1427	2034	13	395	1529	6
124	394	1099	571	396	1195	605	30	398	1293	661	401	1397	2012	14	403	1498	6
125	400	1074	552	408	1169	586	31	405	1								

Tamil, Adi; Malayalam, Karkatagam; Bengali, Sravana.

Tamil, Aui; Malayalam, Mithunam; Bengali, Ashada.

June

July

August

TABLE XIII.

Sunrise from 18° to 22° N. Latitude.

Day of Solar year.	Lat. 18° - 428" Long.			Lat. 19° - 460" Long.			Days of solar months.	Lat. 20° - 476" Long.			Lat. 21° + 800" Long.			Lat. 22° - 616" Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds.	
	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920		A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	
126	+408	+1049	+535	+410	+1143	+567	1	+412	+1237	+619	+415	+1339	+1968	16	+417	+1436	+619
127	415	1024	517	417	1116	547	2	419	1209	598	422	1309	1945	17	424	1405	595
128	421	1000	499	424	1090	528	3	426	1182	578	429	1280	1923	18	431	1375	572
129	428	975	481	430	1064	508	4	433	1154	557	435	1251	1900	19	438	1344	548
130	435	950	463	437	1038	489	5	440	1126	526	442	1222	1878	20	445	1313	524
131	441	926	445	443	1011	468	6	446	1099	515	447	1192	1853	21	451	1282	499
132	447	901	427	450	985	450	7	452	1071	492	455	1162	1831	22	457	1251	473
133	453	876	420	456	959	441	8	459	1043	482	461	1134	1818	23	464	1220	460
134	459	852	413	462	932	432	9	464	1016	471	467	1104	1806	24	470	1189	445
135	465	827	405	468	906	424	10	470	988	460	473	1075	1793	25	476	1158	431
136	471	802	398	474	880	415	11	476	960	450	479	1046	1781	26	482	1127	416
137	476	777	390	479	853	405	12	482	932	439	485	1016	1768	27	487	1096	401
138	488	753	389	485	827	396	13	487	905	427	490	987	1754	28	493	1066	387
139	487	728	375	490	801	386	14	493	877	417	496	958	1742	29	499	1035	372
140	492	703	366	495	775	377	15	498	849	405	501	929	1728	30	504	1004	357
141	497	679	358	500	748	367	16	503	822	394	506	899	1715	31	509	973	341
142	502	654	350	505	722	357	17	508	794	382	511	870	1701	1	514	942	326
143	507	629	342	510	696	347	18	513	766	370	516	841	1687	2	519	911	311
144	511	605	333	514	669	336	19	517	739	358	520	811	1673	3	523	880	294
145	516	580	324	519	643	327	20	522	711	346	525	782	1659	4	528	849	279
146	520	555	315	523	617	316	21	526	683	334	529	753	1645	5	532	818	262
147	524	530	306	527	590	305	22	530	655	321	534	723	1631	6	536	787	246
148	529	506	298	532	564	295	23	535	628	309	538	694	1616	7	540	757	230
149	532	481	288	536	538	284	24	539	600	297	542	665	1602	8	544	726	213
150	536	456	278	539	512	273	25	542	572	283	545	636	1586	9	548	696	197
151	539	432	268	542	485	261	26	545	545	270	548	606	1571	10	552	664	180
152	519	408	235	523	460	227	27	527	516	235	531	576	1555	11	535	632	143
153	522	395	225	526	445	215	28	530	499	221	534	557	1519	12	538	612	126
154	526	382	216	529	430	203	29	533	483	208	537	539	1504	13	541	591	108
155	529	368	205	532	416	192	30	536	466	191	540	520	1488	14	544	571	91
156	531	355	194	534	401	179	31	538	450	180	542	502	1472	15	546	550	72
157	533	342	183	536	386	166	1	540	433	165	544	483	1455	16	548	530	54
158	536	329	173	538	371	153	2	542	416	150	546	464	1438	17	550	510	36
159	538	316	162	540	356	140	3	544	400	136	548	446	1422	18	552	489	17
160	540	302	150	542	342	128	4	546	383	121	550	427	1405	19	554	409	1
161	542	289	134	544	327	115	5	548	367	107	552	409	1389	20	556	448	20
162	543	276	127	546	312	102	6	549	350	91	553	390	1371	21	557	428	39
163	545	263	117	547	297	87	7	551	333	75	555	371	1355	22	559	408	57
164	547	250	105	548	282	73	8	553	317	60	557	353	1338	23	561	387	76
165	548	236	93	550	268	59	9	554	300	44	558	334	1320	24	562	367	96
166	548	223	79	551	253	45	10	554	284	26	558	316	1300	25	562	346	117
167	549	210	67	552	238	31	11	555	267	10	559	297	1282	26	563	326	164
168	550	197	54	553	223	17	12	556	250	6	560	278	1264	27	564	306	157
169	551	184	41	554	208	2	13	557	234	22	561	260	1246	28	565	285	178
170	551	170	28	554	194	13	14	557	217	39	561	241	1227	29	565	265	199
171	551	157	14	554	179	28	15	557	201	57	561	223	1207	30	565	244	220
172	552	144	2	554	164	44	16	557	184	74	561	204	1188	1	565	224	241
173	551	131	13	554	149	59	17	557	167	91	561	185	1169	2	565	204	262
174	551	118	27	554	134	74	18	557	151	108	561	167	1150	3	565	183	283
175	551	104	40	554	120	90	19	557	131	125	561	148	1131	4	565	163	304
176	550	91	55	554	105	105	20	557	118	143	561	130	1111	5	565	142	325
177	549	78	69	553	90	121	21	557	101	160	560	111	1091	6	564	122	347
178	548	65	84	552	75	137	22	555	84	179	559	92	1071	7	563	102	369
179	548	52	98	551	60	154	23	554	68	197	558	74	1051	8	562	81	392
180	547	38	112	550	46	170	24	553	51	215	557	55	1031	9	561	61	414
181	545	25	128	548	31	187	25	551	35	235	555	37	1009	10	559	40	437
182	544	12	142	547	16	204	26	550	18	253	554	18	989	11	558	20	459
183	542	0	158	545	0	221	27	549	0	271	554	0	970	12	558	0	480
184	541	-14	173	544	-15	237	28	547	-17	290	552	-19	949	13	556	-21	503
185	539	27	188	542	31	255	29	545	34	309	550	38	928	14	554	42	526
186	537	41	204	540	46	272	30	543	52	319	548	58	906	15	552	63	549

TABLE XIII.

Sunrise from 18° to 22° N. Latitude.

Day of Solar year.	Lat. 18° —428" Long.			Lat. 19° —460" Long.			Days of solar months.	Lat. 20° —476" Long.			Lat. 21° +800" Long.			Lat. 22° —61 Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Satara.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Poona.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Nasik.	Eqn. of Time in Seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Nagpur.	Eng. date.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds.
			A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920
187	+535	—54	—219	+538	—61	—289	1	+541	—69	—348	+546	—77	+885	16	+550	—84	—51
188	533	68	235	536	76	306	2	539	86	367	544	96	864	17	548	105	53
189	530	82	252	533	92	325	3	536	103	387	541	115	842	18	545	127	63
190	527	95	268	530	107	343	4	533	120	407	538	134	820	19	542	148	64
191	524	109	285	527	122	361	5	530	138	428	535	154	797	20	539	169	66
192	521	122	301	524	138	380	6	527	155	448	532	173	775	21	536	190	69
193	518	136	318	521	153	399	7	524	172	468	529	192	753	22	533	211	72
194	515	150	346	518	168	428	8	521	189	499	526	211	721	23	530	232	74
195	512	163	373	515	184	458	9	518	206	532	523	230	698	24	527	253	77
196	508	177	402	511	199	488	10	514	224	561	519	250	655	25	523	274	80
October																	
197	504	190	431	507	214	518	11	510	241	593	515	269	622	26	519	295	83
198	500	204	459	503	229	548	12	506	258	624	511	288	589	27	515	316	86
199	496	218	488	499	245	579	13	502	275	656	507	307	555	28	511	338	89
200	491	231	518	494	260	610	14	497	292	689	502	326	521	29	506	359	92
201	487	245	547	490	275	640	15	493	310	721	498	346	488	30	502	380	95
202	483	258	575	486	291	677	16	489	327	752	494	365	454	31	498	401	102
203	478	272	606	481	306	702	17	484	344	785	490	384	411	1	493	422	106
204	473	286	635	476	321	733	18	479	361	818	484	403	386	2	488	443	110
205	468	299	664	471	337	765	19	474	378	850	479	422	351	3	483	464	113
206	463	313	694	466	352	796	20	469	396	883	474	442	317	4	478	485	117
November																	
207	459	326	723	462	367	825	21	465	413	915	470	461	284	5	474	506	120
208	454	340	752	457	382	857	22	460	430	947	465	480	250	6	469	527	124
209	448	354	783	451	398	890	23	454	447	981	459	499	214	7	463	549	127
210	443	367	813	446	413	921	24	449	464	1010	454	518	180	8	458	570	131
211	437	381	844	440	428	953	25	443	482	1043	448	538	145	9	452	591	135
212	431	394	874	434	444	984	26	437	499	1081	442	557	109	10	446	612	138
213	441	408	889	443	460	1003	27	446	516	1100	449	576	87	11	451	632	141
214	435	433	920	437	486	1035	28	440	544	1134	443	605	52	12	445	663	145
215	428	457	951	430	513	1069	29	433	571	1168	436	635	15	13	438	694	149
216	421	482	983	423	539	1102	30	426	599	1203	429	664	— 21	14	431	725	152
December																	
217	414	507	1015	416	565	1135	1	419	627	1238	422	693	57	15	424	756	156
218	407	531	1046	409	591	1168	2	412	654	1272	415	722	93	16	417	786	160
219	400	556	1078	402	618	1202	3	405	682	1307	408	752	130	17	409	817	164
220	393	581	1110	395	644	1235	4	398	710	1342	401	781	166	18	402	848	168
221	386	606	1142	388	670	1268	5	391	738	1377	394	810	202	19	394	879	171
222	379	630	1173	381	697	1302	6	384	765	1411	387	840	239	20	386	910	175
223	372	655	1204	374	723	1334	7	377	793	1447	380	869	276	21	378	941	179
224	364	680	1239	366	749	1370	8	369	821	1484	372	898	313	22	370	972	183
225	356	704	1275	358	776	1406	9	361	848	1520	364	928	350	23	362	1003	187
226	348	729	1310	350	802	1442	10	353	876	1557	356	957	388	24	354	1034	191
January																	
227	340	754	1346	342	828	1478	11	345	904	1593	348	986	425	25	345	1065	195
228	332	778	1381	334	854	1514	12	337	931	1630	340	1015	462	26	337	1095	198
229	324	803	1417	326	881	1550	13	329	959	1667	332	1045	499	27	329	1126	202
230	315	828	1453	317	907	1587	14	320	987	1704	323	1074	537	28	320	1157	206
231	307	853	1489	309	933	1623	15	312	1015	1741	315	1103	575	29	311	1188	210
232	299	877	1524	301	960	1659	16	304	1042	1777	307	1133	612	30	303	1219	214
233	291	902	1560	293	986	1695	17	296	1070	1814	298	1162	649	1	294	1250	218
234	282	927	1626	284	1012	1732	18	287	1098	1852	290	1191	687	2	284	1280	222
235	273	951	1633	275	1039	1769	19	278	1125	1889	281	1221	725	3	275	1312	225
236	264	976	1669	266	1065	1806	20	269	1153	1927	272	1250	764	4	266	1343	229
February																	
237	255	1001	1706	257	1091	1843	21	260	1181	1964	263	1279	852	5	257	1374	233
238	246	1025	1742	248	1117	1880	22	251	1208	2002	254	1308	840	6	248	1404	237
239	237	1050	1779	239	1144	1917	23	242	1236	2040	245	1338	878	7	238	1435	241
240	228	1075	1815	230	1170	1954	24	233	1264	2077	236	1367	916	8	229	1466	245
241	218	1100	1853	220	1196	1992	25	223	1292	2116	226	1396	956	9	219	1497	249
242	209	1124	1889	211	1223	2029	26	214	1320	2153	217	1426	994	10	210	1528	253
243	202	1148	1924	203	1248	2065	27	203	1348	2193	203	1456	1027	11	204	1560	256
244	193	1175	1960	194	1276	2102	28	194	1377	2231	194	1485	1075	12	195	1590	260
245	183	1203	1998	184	1304	2140	29	184	1403	2269	184	1514	1114	13	185	1620	264
246	173	1230	2035	174	1332	2178	30	174	1434	2308	174	1544	1154	14	175	1649	268

TABLE XIII.

Sunrise from 18° to 22° N. Latitude.

Solar year.	Lat. 18° —428" Long.			Lat. 19° —460" Long.			Days of solar months.	Lat. 20° —476" Long.			Lat. 21° +800" Long.			Lat. 22° —616" Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Satara.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Poona.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Nasik.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Nagpur.	Eng. date.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Baroda.
	A.D. 1840—1920			A.D. 1840—1920				A.D. 1840—1920			A.D. 1840—1920				A.D. 1840—1920		
47	+163	—1258	—2073	+164	—1360	—2216	1	+164	—1462	—2346	+164	—1573	—1193	15	+165	—1679	—2726
48	153	1285	2110	154	1388	2254	2	154	1491	2385	154	1602	1232	16	155	1709	2766
49	143	1313	2148	144	1416	2292	3	144	1520	2424	144	1631	1271	17	145	1739	2806
50	133	1340	2185	134	1444	2330	4	134	1548	2462	134	1660	1310	18	135	1769	2846
51	123	1368	2223	124	1472	2368	5	124	1577	2501	124	1690	1350	19	125	1798	2885
52	113	1395	2260	114	1500	2406	6	114	1605	2539	114	1719	1389	20	115	1828	2925
53	103	1423	2298	104	1528	2444	7	104	1634	2598	104	1748	1428	21	105	1858	2965
54	93	1450	2335	94	1556	2482	8	94	1663	2618	94	1777	1466	22	95	1888	3005
55	83	1478	2353	84	1584	2499	9	84	1691	2634	84	1806	1482	23	85	1918	3020
56	73	1505	2370	74	1612	2522	10	74	1720	2651	74	1836	1498	24	75	1947	3035
57	63	1533	2388	64	1640	2533	11	64	1748	2667	64	1865	1514	25	65	1977	3051
58	53	1560	2405	54	1668	2550	12	54	1777	2684	54	1894	1530	26	55	2007	3066
59	43	1588	2423	44	1696	2567	13	44	1806	2700	44	1923	1545	27	44	2037	3082
60	33	1615	2441	34	1724	2585	14	34	1834	2716	34	1952	1561	28	34	2067	3097
61	23	1643	2458	24	1752	2602	15	24	1863	2733	24	1982	1577	29	24	2096	3112
62	13	1670	2476	14	1780	2619	16	14	1891	2749	14	2011	1593	30	14	2126	3128
63	2	1698	2493	2	1808	2636	17	2	1920	2766	2	2040	1609	31	2	2156	3143
64	—10	1725	2515	—10	1836	2659	18	—10	1949	2788	—10	2069	1631	1	—11	2186	3164
65	20	1753	2533	20	1864	2676	19	20	1977	2804	20	2098	1647	2	20	2216	3179
66	31	1780	2550	32	1892	2693	20	32	2006	2821	32	2128	1663	3	32	2245	3194
67	40	1808	2567	41	1920	2709	21	41	2034	2835	41	2157	1678	4	42	2275	3211
68	50	1835	2584	51	1948	2726	22	51	2063	2853	51	2186	1694	5	52	2305	3225
69	60	1863	2602	61	1976	2743	23	61	2092	2869	61	2215	1709	6	63	2335	3241
70	69	1890	2619	70	2004	2760	24	70	2120	2881	70	2244	1724	7	73	2365	3256
71	80	1918	2637	81	2032	2778	25	81	2149	2902	81	2274	1741	8	84	2394	3272
72	90	1945	2655	91	2060	2795	26	91	2177	2918	91	2303	1757	9	94	2424	3288
73	100	1973	2672	101	2088	2812	27	101	2206	2935	101	2332	1773	10	104	2454	3303
74	102	2000	2682	102	2116	2820	28	104	2236	2941	101	2360	1779	11	101	2484	3305
75	109	2008	2697	109	2123	2834	29	108	2242	2954	107	2366	1791	12	107	2489	3316
276	115	2015	2710	115	2130	2847	1	114	2249	2967	114	2372	1804	13	114	2494	3328
277	122	2023	2725	122	2137	2861	2	121	2255	2980	120	2378	1816	14	120	2500	3340
278	129	2030	2739	129	2144	2875	3	128	2262	2994	127	2384	1829	15	127	2505	3352
279	135	2038	2753	135	2151	2888	4	134	2268	3006	133	2389	1841	16	133	2510	3363
280	142	2046	2768	142	2159	2903	5	141	2274	3019	140	2395	1853	17	140	2515	3375
281	149	2053	2782	149	2166	2917	6	148	2281	3033	146	2401	1865	18	146	2520	3386
282	155	2061	2796	155	2173	2940	7	154	2287	3045	153	2407	1878	19	153	2526	3399
283	162	2068	2810	162	2180	2944	8	161	2294	3059	159	2413	1890	20	159	2531	3410
284	169	2076	2825	169	2187	2957	9	168	2300	3072	166	2419	1902	21	166	2536	3422
285	175	2084	2806	175	2194	2936	10	174	2306	3050	172	2425	1878	22	172	2541	3397
286	182	2091	2788	182	2201	2917	11	181	2313	3029	179	2431	1856	23	179	2546	3373
287	189	2099	2769	189	2208	2897	12	188	2318	3008	185	2437	1832	24	185	2552	3347
288	195	2106	2750	195	2215	2876	13	194	2326	2986	192	2443	1809	25	192	2557	3323
289	202	2114	2732	202	2222	2856	14	201	2332	2964	198	2448	1786	26	198	2562	3298
290	209	2122	2714	209	2230	2837	15	208	2338	2943	205	2454	1763	27	205	2567	3274
291	215	2129	2695	215	2237	2816	16	214	2345	2921	211	2460	1739	28	211	2572	3249
292	222	2137	2676	222	2244	2796	17	221	2351	2900	218	2466	1716	29	218	2578	3224
293	229	2144	2658	229	2251	2777	18	228	2358	2879	224	2472	1693	30	224	2583	3199
294	235	2152	2639	235	2258	2756	19	234	2364	2857	231	2474	1670	31	231	2588	3175
295	242	2160	2621	242	2265	2736	20	241	2370	2836	238	2484	1647	1	237	2593	3150
296	249	2167	2603	249	2272	2717	21	248	2377	2815	245	2490	1625	2	244	2598	3126
297	255	2175	2583	255	2279	2696	22	254	2383	2793	252	2496	1602	3	250	2604	3100
298	262	2182	2565	262	2286	2676	23	261	2390	2772	259	2502	1579	4	257	2609	3076
299	269	2190	2537	269	2295	2656	24	268	2396	2750	266	2508	1556	5	263	2614	3051
300	276	2198	2529	275	2301	2636	25	274	2402	2728	272	2513	1533	6	270	2619	3027
301	283	2205	2519	282	2308	2616	26	281	2409	2707	278	2519	1509	7	276	2624	3002
302	290	2213	2492	289	2315	2596	27	288	2415	2686	284	2525	1485	8	283	2630	2977
303	297	2220	2474	295	2322	2576	28	294	2422	2664	290	2531	1462	9	289	2635	2952
304	304	2228	2456	302	2328	2556	29	300	2428	2642	297	2536	1439	10	295	2640	2927
305	307	2203	2434	305	2301	2532	30	303	2400	2617	300	2506	1412	11	298	2609	2899

TABLE XIII.
Sunrise from 18° to 22° N. Latitude.

Day of Solar year.	Lat. 18° —428" Long.				Lat. 19° —460" Long.				Lat. 20° —470" Long.				Lat. 21° +800" Long.				Lat. 22° —61" Long.																						
	Eqn. of time in seconds.				Eqn. of time in seconds.				Eqn. of time in seconds.				Eqn. of time in seconds.				Eqn. of time in seconds.																						
	☉'s Trop. Long. in seconds.	Total Corr. in seconds.	Satara.		☉'s Trop. Long. in seconds.	Total Corr. in seconds.	Poona.		Days of solar months.	☉'s Trop. Long. in seconds.	Total Corr. in seconds.	Nasik.		☉'s Trop. Long. in seconds.	Total Corr. in seconds.	Nagpur.		Eng. date.	☉'s Trop. Long. in seconds.	Total Corr. in seconds.																			
																						A.D. 1840—1920			A.D. 1840—1920			A.D. 1840—1920			A.D. 1840—1920			A.D. 1840—1920			A.D. 1840—1920		
306	—310	—2178	—2382	—308	—2275	—2509	1	—306	—2372	—2592	—303	—2477	—1396	12	—301	—2378	—287																						
307	313	2152	2389	311	2268	2485	2	309	2344	2567	306	2447	1359	13	304	2346	284																						
308	316	2127	2367	314	2221	2461	3	312	2316	2542	309	2417	1332	14	307	2315	281																						
309	319	2102	2345	317	2194	2437	4	315	2287	2516	312	2388	1305	15	310	2384	278																						
310	322	2077	2323	320	2168	2414	5	318	2269	2491	315	2358	1279	16	313	2353	275																						
311	325	2052	2301	323	2141	2390	6	321	2231	2466	318	2328	1252	17	316	2322	273																						
312	328	2026	2278	326	2114	2366	7	324	2203	2441	321	2298	1225	18	319	2390	270																						
313	331	2001	2256	329	2088	2343	8	327	2175	2416	324	2269	1199	19	322	2359	267																						
314	334	1976	2234	332	2061	2319	9	330	2147	2391	327	2239	1172	20	325	2328	264																						
315	337	1951	2213	335	2034	2295	10	333	2119	2365	330	2209	1146	21	328	2297	261																						
316	340	1926	2170	338	2008	2250	11	336	2091	2316	333	2180	1095	February	22	331	2266	256																					
317	343	1900	2128	341	1981	2207	12	339	2063	2267	336	2150	1044		23	334	2224	251																					
318	346	1875	2087	344	1954	2164	13	342	2035	2218	339	2120	993		24	337	2203	245																					
319	349	1850	2044	347	1927	2119	14	345	2006	2169	342	2090	942		25	340	2172	240																					
320	352	1825	2002	350	1901	2076	15	348	1978	2120	345	2061	891		26	343	2141	235																					
321	355	1808	1959	353	1874	2031	16	351	1950	2073	348	2031	841		27	346	2110	230																					
322	358	1774	1916	356	1847	1986	17	354	1922	2023	351	2001	790		28	349	2078	224																					
323	361	1749	1837	359	1821	1941	18	357	1894	1974	354	1972	739		1	352	2047	219																					
324	364	1724	1829	362	1794	1872	19	360	1866	1925	357	1942	688		2	355	2016	214																					
325	367	1699	1786	365	1767	1825	20	363	1838	1876	360	1912	637		3	358	1985	208																					
326	370	1674	1741	368	1741	1778	21	366	1810	1827	363	1883	588	4	361	1954	203																						
327	373	1648	1697	371	1714	1731	22	369	1782	1778	366	1853	535	5	363	1922	198																						
328	376	1623	1652	374	1687	1684	23	372	1754	1729	369	1823	484	6	365	1891	192																						
329	379	1698	1607	377	1660	1637	24	375	1725	1680	371	1793	430	7	367	1860	187																						
330	382	1573	1561	380	1634	1590	25	377	1697	1632	373	1764	380	8	369	1829	182																						
331	385	1548	1516	383	1607	1543	26	379	1669	1581	375	1734	329	9	371	1798	176																						
332	388	1522	1471	385	1580	1495	27	381	1641	1531	377	1704	277	10	373	1766	171																						
333	391	1497	1426	387	1554	1447	28	383	1613	1481	379	1675	225	11	375	1735	166																						
334	392	1472	1379	389	1527	1399	29	385	1585	1431	381	1645	173	12	377	1704	160																						
335	395	1448	1305	391	1500	1351	1	387	1556	1381	383	1616	121	13	379	1672	155																						
336	395	1400	1257	391	1450	1302	2	387	1504	1329	383	1562	67	14	379	1616	149																						
337	396	1351	1209	392	1400	1252	3	388	1452	1278	384	1508	14	15	380	1561	144																						
338	396	1303	1161	392	1350	1202	4	388	1400	1226	384	1454	+ 40	16	380	1505	138																						
339	397	1255	1084	393	1300	1153	5	389	1348	1175	385	1400	93	17	381	1449	133																						
340	397	1206	1065	393	1250	1103	6	389	1296	1123	385	1346	147	18	381	1393	127																						
341	398	1158	1018	394	1200	1054	7	390	1246	1073	386	1293	199	19	382	1338	122																						
342	398	1110	970	394	1150	1004	8	390	1193	1021	386	1239	253	20	382	1282	116																						
343	399	1026	923	395	1100	955	9	391	1141	970	387	1185	306	21	383	1226	111																						
344	399	1013	875	395	1050	905	10	391	1089	918	387	1131	360	22	383	1171	105																						
345	400	965	828	396	1000	856	11	392	1037	868	388	1077	412	23	384	1115	100																						
346	400	917	780	396	950	806	12	392	985	816	388	1023	466	24	384	1059	94																						
347	401	868	733	397	900	757	13	393	933	765	389	969	518	25	385	1004	89																						
348	401	820	685	397	850	707	14	393	881	713	389	915	572	26	385	948	83																						
349	402	772	637	398	800	658	15	394	829	662	390	861	625	27	386	892	77																						
350	402	723	589	398	750	608	16	394	779	611	390	807	670	28	386	836	72																						
351	403	675	542	399	700	559	17	395	726	560	391	754	732	29	387	781	66																						
352	403	627	493	399	650	509	18	395	674	508	391	700	786	30	387	725	61																						
353	404	579	446	400	600	460	19	396	622	447	392	646	839	31	388	668	55																						
354	404	530	398	400	550	410	20	396	570	395	392	592	893	1	388	614	50																						
355	405	482	350	401	500	361	21	397	518	344	393	538	946	2	389	558	44																						
356	405	434	302	401	450	311	22	397	466	293	393	484	999	3	389	502	39																						
357	406	385	255	402	400	262	23	398	414	242	394	430	1052	4	390	447	33																						
358	406	337	207	402	350	212	24	398	362	190	394	376	1106	5	390	391	28																						
359	407	289	159	403	300	163	25	399	310	139	395	322	1159	6	391	335	22																						
360	407	240	111	403	250	113	26	399	258	87	395	268	1213	7	391	279	17																						
361	408	192	64	404	200	64	27	400	207	36	396	215	1266	8	392	224	11																						
362	408	144	15	404	150	14	28	400	155	+ 16	396	161	1320	9	392	168	0																						
363	409	96	+ 32	405	100	+ 35	29	401	103	67	397	107	1373	10	393	173	0																						
364	409	48	80	405	50	85	30	401	51	119	397	53	1427	11	393	57	+ 4																						
365	409	0	129	405	0	136	31	401	0	171	397	0	1481	12	393	0	10																						

TABLE XIII.

Sunrise from 23° to 27° N. Latitude.

Solar year.	Lat. 23° —20" Long.			Lat. 24° —876" Long.			Days of solar months.	Lat. 25° +1736" Long.			Lat. 26° +2264" Long.			Eng. date.	Lat. 27° +1544" Long.		
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Indore.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Anhilwad.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Benares.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Patna.		Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Oudh.
	A.D. 1840—1920			A.D. 1840—1920				A.D. 1840—1920			A.D. 1840—1920				A.D. 1840—1920		
1	—389	+ 58	+ 801	—384	+ 60	— 8	1	—380	+ 62	+ 2652	—376	+ 64	+ 3230	13	—372	+ 66	+ 2556
2	387	115	860	383	119	+ 52	2	379	123	2714	374	128	3296	14	370	132	2624
3	385	173	920	381	179	114	3	377	185	2778	373	192	3361	15	368	198	2692
4	384	230	978	380	238	174	4	376	247	2841	372	256	3426	16	367	264	2759
5	382	288	1038	378	298	236	5	374	308	2904	370	319	3491	17	365	329	2827
6	380	346	1098	376	358	298	6	372	370	2968	368	383	3557	18	364	395	2894
7	379	403	1156	374	417	359	7	370	432	3032	366	447	3624	19	362	461	2962
8	376	461	1217	372	477	421	8	368	494	3096	364	511	3689	20	359	527	3031
9	374	518	1223	370	536	482	9	365	555	3160	361	575	3756	21	357	593	3099
10	372	576	1336	368	596	544	10	363	617	3225	359	639	3821	22	355	659	3165
11	369	634	1373	365	656	582	11	361	679	3263	357	703	3861	23	353	725	3206
12	367	691	1408	363	715	618	12	358	740	3302	355	767	3901	24	350	791	3248
13	364	749	1443	360	775	656	13	356	802	3340	352	831	3941	25	348	857	3290
14	362	806	1477	357	834	693	14	353	864	3380	349	895	3982	26	345	923	3332
15	359	864	1513	355	894	729	15	350	925	3418	347	958	4021	27	342	988	3374
16	356	922	1549	352	954	767	16	348	987	3456	344	1022	4062	28	340	1054	3415
17	353	979	1585	349	1013	804	17	345	1049	3495	341	1086	4103	29	338	1120	3456
18	350	1037	1620	346	1073	842	18	342	1111	3535	338	1150	4144	30	336	1186	3498
19	346	1094	1658	343	1132	879	19	338	1172	3574	336	1214	4183	1	334	1252	3539
20	343	1152	1694	339	1192	917	20	336	1234	3612	334	1278	4223	2	332	1318	3580
21	340	1210	1730	335	1252	956	21	334	1296	3650	332	1342	4263	3	330	1384	3621
22	338	1267	1765	333	1311	994	22	332	1357	3688	330	1406	4302	4	328	1450	3662
23	336	1325	1799	331	1371	1028	23	330	1419	3716	328	1470	4342	5	326	1516	3704
24	334	1382	1833	329	1430	1065	24	328	1481	3764	326	1534	4382	6	324	1582	3745
25	332	1440	1868	326	1490	1102	25	326	1542	3802	324	1597	4421	7	322	1648	3786
26	330	1498	1903	324	1550	1129	26	324	1604	3840	322	1661	4461	8	320	1714	3827
27	328	1555	1938	322	1609	1185	27	322	1666	3878	320	1725	4501	9	318	1780	3868
28	326	1613	1973	320	1669	1211	28	320	1728	3916	318	1789	4541	10	316	1846	3920
29	324	1617	2008	318	1728	1248	29	318	1789	3955	316	1853	4590	11	314	1912	3961
30	322	1728	2043	316	1788	1284	30	316	1852	3992	314	1916	4620	12	312	1976	3992
31	320	1762	2078	314	1823	1321	1	314	1888	4030	312	1954	4660	13	310	2015	4033
32	318	1795	2113	312	1857	1358	2	312	1924	4068	310	1932	4699	14	308	2054	4074
33	316	1827	2147	310	1892	1393	3	310	1960	4107	308	2029	4739	15	306	2094	4116
34	314	1859	2185	308	1926	1430	4	308	1997	4144	306	2067	4779	16	304	2133	4157
35	312	1892	2226	305	1960	1467	5	306	2032	4182	304	2104	4818	17	302	2172	4198
36	310	1925	2251	303	1995	1503	6	304	2068	4220	302	2142	4858	18	300	2211	4239
37	307	1958	2287	301	2029	1540	7	302	2104	4258	299	2180	4899	19	297	2250	4281
38	302	1990	2324	299	2064	1577	8	297	2141	4299	294	2218	4942	20	292	2290	4326
39	296	2024	2363	293	2098	1617	9	291	2176	4341	288	2255	4985	21	286	2329	4371
40	290	2057	2402	287	2132	1657	10	285	2212	4383	283	2293	5028	22	280	2368	4416
41	284	2090	2440	282	2167	1698	11	279	2248	4425	277	2331	5171	23	275	2407	4461
42	278	2123	2442	275	2201	1701	12	273	2284	4429	271	2368	5075	24	269	2446	4465
43	272	2155	2443	269	2235	1703	13	267	2320	4432	265	2406	5078	25	263	2486	4470
44	266	2187	2445	263	2270	1705	14	261	2356	4435	259	2444	5082	26	257	2525	4474
45	259	2220	2447	257	2304	1707	15	255	2392	4438	253	2481	5085	27	251	2564	4479
46	253	2253	2449	251	2339	1710	16	249	2428	4440	247	2519	5089	28	245	2603	4483
47	246	2286	2452	244	2373	1713	17	243	2464	4444	240	2557	5094	29	239	2642	4487
48	240	2318	2453	238	2407	1716	18	236	2500	4447	234	2595	5097	30	232	2682	4493
49	234	2352	2455	232	2442	1717	19	230	2537	4450	228	2632	5101	31	226	2721	4497
50	227	2385	2457	225	2476	1720	20	223	2572	4453	221	2670	5105	1	220	2760	4502
51	220	2418	2460	218	2511	1723	21	217	2608	4456	215	2708	5109	2	213	2799	4507
52	214	2451	2462	212	2545	1725	22	210	2644	4460	208	2745	5114	3	207	2838	4511
53	207	2483	2464	205	2579	1728	23	203	2681	4464	201	2783	5117	4	200	2878	4517
54	200	2515	2466	198	2614	1731	24	197	2716	4467	195	2821	5122	5	193	2917	4522
55	193	2548	2469	191	2648	1734	25	190	2752	4471	188	2858	5126	6	186	2956	4528
56	186	2581	2472	184	2682	1737	26	183	2788	4474	181	2896	5131	7	180	2995	4532
57	178	2614	2476	177	2717	1741	27	175	2824	4479	174	2934	5136	8	173	3034	4537
58	174	2646	2475	174	2752	1740	28	171	2860	4480	171	2972	5136	9	170	3074	4539
59	171	2679	2474	171	2786	1739	29	168	2896	4480	168	3009	5137	10	167	3113	4540
60	167	2712	2473	167	2820	1739	30	165	2932	4480	165	3047	5137	11	164	3152	4542
61	163	2744	2473	163	2856	1739	31	162	2968	4480	162	3084	5138	12	161	3192	4543
62	159	2740	2472	15													

Bengal, Vaisakha.

Tamil, Chittirai; Medam; Malayalam; Medam; Beng.

Tamil, Jyestha.

Tamil, Vaikasi; Malayalam, Edavam; Beng.

April

May

June

Sunrise from 23° to 27° N. Latitude.

Day of Solar year.	Lat. 23° —20'' Long.			Lat. 24° —876'' Long.			Days of solar months.	Lat. 25° +1736'' Long.			Lat. 26° +2264'' Long.			Lat. 27° +1514'' Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Indore.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Anhilwad.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Benares.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Patna.	Eng. date.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds.
			A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920
63	—155	+2735	+2472	—155	+2848	+1739	1	—156	+2962	+4480	—156	+3079	+5139	14	—155	+3189	+454
64	151	2731	2472	151	2844	1739	2	150	2959	4483	150	3077	5143	15	150	3187	454
65	143	2726	2475	142	2840	1744	3	142	2956	4488	141	3074	5149	16	147	3186	455
66	134	2722	2480	133	2837	1749	4	133	2952	4493	133	3072	5155	17	132	3184	456
67	125	2718	2485	125	2833	1754	5	124	2949	4499	124	3070	5162	18	123	3182	457
68	116	2713	2489	116	2830	1759	6	115	2946	4505	115	3067	5168	19	115	3181	457
69	107	2709	2494	106	2825	1765	7	106	2943	4511	106	3065	5175	20	105	3179	458
70	98	2704	2498	97	2821	1770	8	97	2940	4517	97	3062	5181	21	97	3178	459
71	88	2700	2504	88	2817	1776	9	88	2937	4524	88	3060	5188	22	87	3176	460
72	79	2606	2482	79	2813	1754	10	79	2934	4501	79	3058	5164	June 23	78	3174	457
73	70	2691	2461	70	2809	1722	11	70	2931	4478	70	3055	5141	24	69	3173	455
74	61	2686	2439	61	2805	1710	12	60	2928	4456	60	3053	5118	25	60	3171	452
75	53	2682	2417	53	2801	1687	13	52	2925	4432	52	3050	5094	26	52	3170	450
76	42	2678	2397	42	2797	1666	14	42	2921	4411	42	3048	5071	27	41	3168	448
77	33	2674	2375	33	2794	1644	15	33	2918	4388	32	3046	5049	28	32	3166	445
78	24	2669	2354	24	2790	1622	16	24	2915	4365	24	3043	5024	29	24	3165	443
79	15	2665	2333	15	2786	1600	17	14	2912	4343	14	3041	5002	30	14	3163	440
80	5	2660	2312	5	2782	1579	18	5	2909	4320	5	3038	4978	1	5	3162	438
81	—4	2656	2290	+4	2778	1557	19	+4	2906	4297	+4	3036	4955	2	+4	3160	435
82	13	2652	2268	13	2774	1535	20	13	2903	4274	13	3034	4931	3	13	3158	433
83	23	2647	2248	23	2770	1514	21	22	2900	4251	22	3031	4908	4	22	3157	431
84	32	2643	2226	32	2766	1492	22	32	2897	4229	32	3029	4885	5	32	3155	428
85	42	2638	2206	42	2762	1471	23	41	2894	4206	41	3026	4862	6	41	3154	426
86	51	2634	2184	50	2758	1447	24	50	2890	4183	50	3024	4838	7	50	3152	423
87	60	2630	2162	59	2755	1425	25	59	2887	4161	59	3022	4815	8	59	3150	421
88	69	2625	2141	69	2751	1404	26	69	2884	4139	68	3019	4791	9	68	3149	419
89	78	2621	2119	78	2747	1382	27	78	2881	4116	78	3017	4769	10	77	3147	416
90	87	2616	2098	87	2743	1360	28	87	2878	4093	87	3014	4745	11	86	3146	414
91	107	2612	2087	107	2740	1349	29	108	2876	4082	108	3012	4734	12	108	3144	413
92	117	2581	2066	118	2709	1329	30	118	2844	4060	118	2979	4711	13	119	3111	410
93	127	2551	2046	128	2678	1308	31	128	2812	4038	128	2947	4689	14	129	3077	408
94	137	2520	2025	138	2647	1287	32	138	2780	4016	138	2914	4666	July 15	139	3044	406
95	147	2490	2005	148	2616	1266	1	148	2748	3994	148	2882	4644	16	149	3011	403
96	157	2459	1984	158	2584	1245	2	158	2717	3972	158	2849	4621	17	159	2977	401
97	167	2428	1963	168	2553	1223	3	168	2685	3951	168	2817	4599	18	169	2944	399
98	177	2398	1943	177	2522	1201	4	178	2653	3929	178	2784	4576	19	179	2911	396
99	187	2368	1922	187	2491	1180	5	188	2621	3907	188	2752	4554	20	189	2878	394
100	196	2337	1901	197	2460	1159	6	197	2589	3884	198	2719	4531	21	198	2844	392
101	206	2306	1880	206	2429	1137	7	207	2557	3862	207	2687	4508	22	208	2811	389
102	215	2275	1859	216	2398	1116	8	217	2525	3841	217	2654	4485	23	218	2778	387
103	225	2245	1836	226	2367	1092	9	226	2493	3814	227	2622	4457	24	227	2744	384
104	235	2214	1814	235	2336	1067	10	236	2461	3788	236	2589	4429	25	237	2711	381
105	244	2184	1790	244	2305	1041	11	245	2429	3761	246	2557	4401	26	246	2678	378
106	253	2153	1767	254	2273	1017	12	254	2397	3734	255	2524	4372	27	256	2644	375
107	262	2122	1743	263	2242	1011	13	263	2366	3707	264	2492	4343	28	265	2611	372
108	271	2092	1720	272	2211	974	14	273	2334	3682	273	2459	4315	29	274	2578	369
109	280	2061	1696	281	2180	941	15	282	2302	3655	283	2427	4287	30	283	2545	366
110	291	2031	1675	290	2149	916	16	291	2270	3628	292	2394	4258	31	292	2511	363
111	298	2000	1649	299	2118	890	17	299	2238	3600	300	2362	4229	1	301	2478	360
112	307	1969	1626	308	2087	865	18	308	2206	3573	309	2329	4200	2	310	2445	357
113	315	1939	1601	316	2056	839	19	317	2174	3546	318	2297	4171	3	319	2411	354
114	324	1908	1578	325	2025	813	20	326	2142	3519	327	2264	4143	4	328	2378	351
115	333	1878	1554	333	1994	787	21	334	2110	3491	335	2232	4113	5	336	2345	348
116	341	1847	1530	342	1963	762	22	343	2078	3464	344	2199	4084	6	344	2311	345
117	349	1816	1505	350	1931	735	23	351	2047	3436	352	2167	4054	7	353	2278	342
118	358	1786	1482	358	1900	709	24	359	2015	3409	360	2134	4025	8	361	2245	339
119	365	1755	1456	366	1869	683	25	367	1983	3381	368	2102	3995	9	369	2212	335
120	373	1725	1432	374	1838	657	26	375	1951	3353	376	2069	3965	10	377	2178	332
121	382	1694	1408	385	1807	633	27	387	1919	3329	389	2037	3941	11	391	2145	330
122	390	1664	1384	393	1776	607	28	395	1888	3301	397	2004	3918	12	400	2112	327
123	397	1631	1358	400	1742	580	29	402	1852	3272	404						

Tamil, Ani; Malayalam, Mithunam; Bengali, Ashada.

Tamil, Adi; Malayalam, Karkatagam; Bengali, Sravana.

June

July

August

Sunrise from 23° to 27° N. Latitude.

Day of Solar year.	Lat. 23° —20" Long.			Lat. 24° —876" Long.			Days of solar months.	Lat. 25° +1736" Long.			Lat. 26° +2264" Long.			Lat. 27° +1544" Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Indore.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Anhilwad.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Benares.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Patna.	Eng. date.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Oudh.
	A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920		
126	+420	+1534	+1284	+422	+1639	+499	1	+424	+1744	+3186	+426	+1853	+3827	16	+429	+1955	+3144
127	427	1501	1258	429	1604	471	2	431	1708	3157	433	1815	3796	17	436	1916	3112
128	434	1469	1233	436	1570	444	3	438	1673	3129	440	1778	3765	18	443	1877	3080
129	441	1436	1207	443	1536	417	4	445	1637	3100	447	1740	3735	19	450	1838	3048
130	448	1404	1182	450	1502	390	5	452	1601	3071	454	1702	3704	20	457	1798	3015
131	454	1371	1155	456	1467	361	6	458	1565	3041	460	1665	3672	21	463	1759	2982
132	460	1339	1128	462	1433	334	7	464	1529	3012	466	1627	3641	22	469	1720	2949
133	467	1306	1113	469	1399	317	8	471	1493	2993	473	1589	3609	23	476	1681	2926
134	473	1274	1097	475	1364	299	9	477	1457	2973	479	1552	3559	24	482	1642	2902
135	479	1241	1080	481	1330	281	10	483	1421	2952	485	1514	3537	25	488	1602	2877
136	485	1209	1064	487	1296	263	11	489	1385	2932	491	1476	3515	26	494	1563	2853
137	490	1176	1047	493	1261	244	12	495	1349	2912	497	1438	3492	27	500	1524	2829
138	496	1144	1031	499	1227	226	13	501	1314	2892	503	1401	3470	28	506	1485	2805
139	502	1111	1015	505	1193	208	14	507	1278	2872	509	1363	3448	29	512	1446	2781
140	507	1079	1007	510	1159	189	15	512	1242	2850	514	1325	3425	30	517	1406	2755
141	512	1046	980	515	1124	170	16	517	1206	2829	519	1288	3402	31	522	1367	2730
142	517	1014	963	520	1090	141	17	522	1170	2808	524	1250	3379	1	527	1328	2705
143	522	981	946	525	1056	132	18	527	1134	2787	529	1212	3356	2	532	1289	2680
144	527	949	929	530	1021	113	19	532	1098	2766	534	1175	3333	3	537	1250	2655
145	531	916	910	535	987	94	20	537	1062	2744	539	1137	3310	4	542	1210	2629
146	536	884	893	539	953	74	21	541	1026	2722	543	1099	3286	5	546	1171	2603
147	540	851	875	542	918	52	22	545	990	2700	547	1061	3261	6	550	1132	2577
148	544	819	857	546	884	32	23	546	955	2675	552	1024	3238	7	552	1093	2549
149	546	786	837	548	850	10	24	547	919	2650	554	986	3212	8	554	1054	2521
150	547	754	815	550	816	—	25	548	883	2624	555	948	3185	9	556	1014	2492
151	548	721	794	551	781	35	26	550	847	2600	556	911	3158	10	558	975	2464
152	549	688	773	552	748	58	27	551	812	2575	558	872	3132	11	560	936	2436
153	550	666	752	553	724	81	28	553	786	2551	559	844	3105	12	562	906	2408
154	551	644	731	555	700	103	29	554	760	2526	560	816	3078	13	564	876	2380
155	552	621	709	556	676	126	30	555	733	2500	561	788	3051	14	566	845	2341
156	553	599	688	557	652	149	31	556	707	2475	563	760	3025	15	568	815	2323
157	554	577	667	558	627	175	1	558	681	2451	565	731	2998	16	570	785	2295
158	555	555	646	560	603	195	2	560	655	2427	567	703	2972	17	572	755	2267
159	557	533	626	562	579	217	3	562	629	2403	570	675	2947	18	574	725	2239
160	559	510	605	564	555	239	4	564	602	2380	572	647	2927	19	576	694	2210
161	561	488	585	566	531	359	5	566	576	2354	574	619	2895	20	578	664	2182
162	562	466	564	567	507	334	6	568	550	2330	575	591	2868	21	579	634	2153
163	564	444	544	569	483	307	7	570	524	2306	577	562	2841	22	581	604	2125
164	566	422	523	571	459	330	8	572	498	2281	579	535	2814	23	583	574	2096
165	567	399	501	572	435	354	9	574	471	2256	580	507	2786	24	584	543	2066
166	567	377	478	572	411	379	10	576	445	2231	580	479	2756	25	584	513	2034
167	568	355	456	573	386	403	11	577	419	2205	581	450	2729	26	585	483	2004
168	569	333	435	574	362	426	12	578	393	2179	582	422	2701	27	586	453	1974
169	570	311	413	575	338	450	13	579	367	2152	583	394	2672	28	587	423	1944
170	570	288	390	575	314	475	14	579	340	2125	583	366	2643	29	587	392	1913
171	570	266	367	575	290	500	15	579	314	2098	583	338	2614	30	587	362	1881
172	570	244	344	575	266	525	16	579	288	2071	583	310	2585	1	587	332	1850
173	570	222	321	575	242	550	17	579	262	2044	583	282	2556	2	587	302	1819
174	570	200	298	575	218	575	18	579	236	2017	583	254	2527	3	587	272	1788
175	570	177	275	575	194	600	19	579	209	1990	583	226	2498	4	587	241	1757
176	570	155	252	575	170	625	20	579	183	1963	583	198	2469	5	587	211	1725
177	569	133	228	574	145	651	21	578	157	1935	582	169	2439	6	586	181	1693
178	568	111	205	573	121	676	22	577	131	1907	581	141	2409	7	585	151	1661
179	567	89	181	572	97	702	23	576	105	1878	580	113	2378	8	584	121	1629
180	566	66	151	571	73	728	24	575	78	1850	579	85	2348	9	583	90	1597
181	564	44	132	569	49	755	25	573	52	1821	577	57	2317	10	581	60	1563
182	563	22	108	568	25	781	26	572	26	1793	576	29	2287	11	580	30	1531
183	562	0	84	566	0	808	27	570	0	1764	575	0	2257	12	579	0	1499
184	560	—	59	564	—	835	28	568	—	1735	573	—	2226	13	577	—	1466
185	558	46	34	562	50	862	29	566	54	1706	571	58	2195	14	575	62	1433
186	556	69	9	560	75	889	30	564	81	1677	569	87	2164	15	573	94	1399

TABLE XIII.

Sunrise from 23° to 27° N. Latitude.

Day of Solar year.	Lat. 23° 20' Long.			Lat. 24° —876" Long.			Days of solar months.	Lat 25° +1736" Long.			Lat. 26° +2264" Long.			Eng. date.	Lat. 27° +154" Long.		
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Indore.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Anhilwad.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Benares.	Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Patna.		Eqn. of Time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds.
	A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920		
187	+554	— 92	— 24	+558	—100	—916	1	+562	—108	+1648	+567	—116	+2133	16	+571	—125	+12
188	551	114	41	555	124	943	2	559	135	1618	564	145	2101	17	568	156	13
189	548	137	67	552	149	971	3	556	163	1587	561	175	2068	18	565	187	14
190	545	160	93	549	174	999	4	553	190	1557	558	204	2036	19	562	218	15
191	542	183	119	546	199	1027	5	550	217	1527	555	232	2004	20	559	250	16
192	539	206	145	543	224	1055	6	547	244	1497	552	262	1972	21	556	281	17
193	536	229	172	540	249	1084	7	543	271	1467	548	291	1940	22	552	312	18
194	533	252	208	537	274	1121	8	540	298	1428	545	320	1899	23	549	343	19
195	530	275	243	534	299	1159	9	536	325	1388	541	349	1858	24	545	374	20
196	526	298	279	530	324	1197	10	532	352	1348	537	378	1816	25	541	406	21
197	522	321	316	526	349	1235	11	528	379	1308	533	407	1774	26	537	437	22
198	518	343	352	522	373	1273	12	524	406	1269	529	436	1733	27	533	468	23
199	514	366	389	518	398	1312	13	520	434	1229	525	466	1691	28	529	499	24
200	509	389	426	513	423	1351	14	515	461	1188	520	495	1648	29	524	530	25
201	505	412	463	509	448	1389	15	511	488	1148	515	524	1605	30	519	562	26
202	501	435	499	505	473	1428	16	507	515	1108	511	553	1564	31	515	593	27
203	496	458	537	500	498	1467	17	502	542	1067	506	582	1521	1	510	624	28
204	491	481	574	495	523	1506	18	497	569	1026	500	611	1457	2	504	655	29
205	486	504	612	490	548	1546	19	492	596	985	495	640	1435	3	499	686	30
206	481	527	649	485	573	1585	20	487	623	944	490	669	1392	4	494	718	31
207	477	550	686	481	598	1623	21	483	650	904	486	698	1350	5	490	749	1
208	472	572	723	476	622	1662	22	478	677	864	480	727	1307	6	484	780	2
209	466	595	762	470	647	1703	23	472	705	822	474	757	1263	7	478	811	3
210	461	618	799	465	672	1742	24	467	732	781	468	786	1219	8	472	842	4
211	455	641	838	459	697	1782	25	461	759	739	462	815	1175	9	466	874	5
212	450	664	875	454	722	1822	26	455	786	697	458	844	1134	10	462	905	6
213	446	688	912	450	748	1860	27	452	812	658	455	872	1093	11	458	936	7
214	445	721	945	447	782	1897	28	449	848	613	452	910	1052	12	455	975	8
215	441	753	982	444	817	1935	29	446	884	580	449	947	1012	13	452	1014	9
216	434	785	1021	437	851	1976	30	439	920	537	442	985	967	14	445	1054	10
217	427	818	1061	430	885	2017	1	432	956	494	435	1023	922	15	438	1093	11
218	420	850	1100	423	919	2058	2	425	991	452	428	1060	878	16	431	1132	12
219	412	883	1141	415	954	2101	3	417	1027	408	420	1098	832	17	423	1171	13
220	405	915	1180	408	988	2142	4	410	1063	365	413	1136	787	18	416	1210	14
221	397	948	1221	400	1022	2184	5	402	1099	321	405	1174	741	19	408	1250	15
222	389	980	1261	392	1057	2227	6	394	1135	277	397	1211	696	20	400	1289	16
223	381	1013	1303	384	1091	2268	7	386	1171	234	389	1249	649	21	392	1328	17
224	373	1045	1342	376	1125	2307	8	378	1207	194	381	1287	609	22	384	1367	18
225	365	1078	1380	368	1160	2346	9	370	1243	154	373	1324	568	23	376	1406	19
226	357	1110	1419	360	1194	2385	10	362	1279	114	365	1362	528	24	368	1446	20
227	348	1143	1458	351	1228	2425	11	353	1315	73	356	1400	486	25	359	1485	21
228	340	1175	1497	343	1262	2464	12	345	1350	34	348	1437	446	26	351	1524	22
229	332	1208	1536	335	1297	2504	13	337	1386	— 6	340	1475	405	27	343	1563	23
230	323	1240	1575	326	1331	2544	14	328	1422	47	331	1513	364	28	334	1602	24
231	314	1273	1615	317	1365	2584	15	319	1458	88	322	1551	322	29	325	1642	25
232	306	1305	1653	309	1400	2623	16	311	1494	128	314	1588	282	30	317	1681	26
233	297	1338	1693	300	1434	2663	17	302	1530	169	305	1626	240	1	308	1720	27
234	287	1370	1734	290	1468	2704	18	292	1566	211	295	1664	198	2	298	1759	28
235	278	1403	1773	281	1503	2744	19	282	1602	253	286	1701	156	3	289	1798	29
236	269	1435	1813	272	1537	2784	20	274	1638	293	277	1739	115	4	280	1838	30
237	260	1468	1852	263	1571	2824	21	265	1674	334	268	1777	73	5	271	1877	1
238	251	1500	1892	254	1605	2864	22	256	1709	374	259	1814	32	6	262	1916	2
239	241	1533	1933	245	1640	2905	23	246	1745	416	249	1852	— 11	7	252	1955	3
240	232	1565	1972	236	1674	2945	24	237	1781	457	240	1890	52	8	243	1994	4
241	222	1598	2013	226	1708	2986	25	227	1817	499	230	1928	92	9	233	2034	5
242	213	1630	2052	217	1743	3026	26	218	1853	540	221	1965	136	10	224	2073	6
243	205	1664	2091	205	1776	3069	27	206	1888	584	206	2004	184	11	207	2112	7
244	196	1695	2131	196	1807	3109	28	197	1920	625	197	2036	225	12	198	2151	8
245	186	1725	2171	186	1838	3150	29	187	1952	667	187	2069	268	13	188	2179	9
246	176	1756	2212	176	1869	3191	30	177	1984	709	177	2101	310	14	178	2212	10

TABLE XIII.

Sunrise from 23° to 27° N. Latitude.

Day of Solar year.	Lat. 23° —20" Long.			Lat. 24° —876" Long.			Days of solar months.	Lat. 25° +1736" Long.			Lat. 26° +2264" Long.			Lat. 27° +1544" Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Indore.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Anhilwad.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Benares.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Patna.	Eng. date.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Oudh.
	A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920		
247	+166	—1786	—2252	+166	—1900	—3232	1	+167	—2016	—751	+167	—2134	—353	15	+168	—2245	—1199
248	156	1817	2293	156	1931	3273	2	157	2047	792	157	2166	385	16	158	2278	1242
249	146	1848	2334	146	1963	3315	3	147	2079	834	147	2199	438	17	148	2312	1286
250	136	1878	2374	136	1994	3356	4	137	2111	876	137	2231	480	18	138	2345	1329
251	126	1909	2415	126	2025	3397	5	127	2143	918	127	2264	523	19	128	2378	1372
252	116	1939	2455	116	2056	3438	6	117	2175	960	117	2296	565	20	118	2412	1416
253	106	1970	2496	106	2087	3479	7	107	2207	1002	107	2329	608	21	108	2445	1459
254	96	2001	2536	96	2118	3520	8	97	2239	1043	97	2361	651	22	98	2478	1502
255	86	2031	2550	86	2149	3534	9	87	2271	1056	87	2394	663	23	88	2512	1514
256	76	2062	2565	76	2180	3548	10	77	2303	1069	77	2426	676	24	78	2545	1525
December																	
257	66	2092	2579	66	2211	3562	11	67	2335	1082	67	2459	688	25	68	2578	1537
258	56	2123	2594	56	2242	3576	12	57	2366	1095	57	2491	701	26	58	2612	1548
259	45	2154	2609	45	2274	3590	13	46	2398	1109	46	2524	714	27	47	2645	1561
260	35	2184	2623	35	2305	3604	14	36	2430	1123	36	2556	726	28	37	2678	1573
261	25	2215	2638	25	2336	3618	15	26	2462	1136	26	2589	739	29	27	2711	1584
262	15	2245	2652	15	2367	3632	16	16	2494	1149	16	2621	751	30	17	2745	1596
263	2	2276	2667	2	2398	3646	17	2	2526	1162	2	2654	764	31	2	2778	1607
264	— 11	2307	2689	— 11	2429	3666	18	—11	2558	1185	—11	2686	786	1	— 11	2811	1631
265	20	2337	2703	21	2460	3680	19	21	2590	1198	21	2719	798	2	21	2845	1643
266	33	2368	2718	33	2491	3696	20	34	2622	1211	34	2751	811	3	35	2878	1654
January																	
267	43	2398	2732	43	2522	3710	21	44	2654	1224	44	2784	823	4	45	2911	1666
268	53	2429	2747	53	2553	3724	22	54	2685	1237	54	2816	836	5	55	2944	1677
269	64	2460	2762	64	2585	3738	23	65	2717	1251	65	2849	849	6	66	2978	1690
270	74	2490	2776	74	2616	3752	24	75	2749	1265	75	2881	861	7	76	3011	1702
271	85	2521	2792	85	2647	3767	25	86	2781	1279	86	2914	875	8	87	3044	1714
272	95	2551	2806	95	2678	3781	26	96	2813	1292	96	2946	887	9	97	3078	1726
273	100	2582	2816	100	2709	3790	27	100	2845	1299	100	2979	894	10	100	3111	1730
274	101	2612	2821	101	2740	3795	28	101	2876	1303	101	3012	897	11	101	3144	1733
275	107	2616	2831	107	2744	3805	29	107	2879	1312	107	3014	905	12	107	3146	1741
February																	
276	113	2621	2842	113	2748	3815	1	113	2882	1321	113	3017	914	13	113	3147	1748
277	120	2625	2853	120	2752	3826	2	119	2885	1330	119	3019	922	14	119	3149	1756
278	126	2630	2864	126	2756	3836	3	126	2888	1340	125	3022	931	15	125	3150	1763
279	132	2634	2874	132	2759	3846	4	132	2891	1349	131	3024	939	16	131	3152	1771
280	139	2638	2885	139	2763	3856	5	138	2895	1359	137	3026	947	17	137	3154	1779
281	145	2643	2896	145	2767	3866	6	144	2898	1368	143	3029	956	18	143	3155	1786
282	151	2647	2906	151	2771	3876	7	151	2901	1378	149	3031	964	19	149	3157	1794
283	158	2652	2918	158	2775	3886	8	157	2904	1387	155	3034	973	20	155	3158	1801
284	164	2656	2928	164	2779	3896	9	163	2907	1395	161	3036	961	21	161	3160	1809
285	170	2660	2901	170	2783	3868	10	169	2910	1365	167	3038	949	22	167	3162	1776
March																	
286	177	2665	2875	177	2787	3840	11	176	2913	1336	173	3041	918	23	173	3163	1743
287	183	2669	2849	183	2791	3812	12	182	2916	1306	179	3043	886	24	179	3165	1709
288	189	2674	2822	189	2795	3783	13	188	2919	1276	185	3046	854	25	185	3166	1676
289	196	2678	2796	196	2798	3756	14	194	2922	1246	191	3048	822	26	191	3168	1643
290	202	2682	2769	202	2802	3728	15	201	2926	1217	197	3050	791	27	197	3170	1610
291	208	2687	2742	208	2806	3699	16	207	2929	1187	203	3053	759	28	203	3171	1577
292	215	2691	2717	215	2810	3672	17	213	2932	1157	209	3055	727	29	209	3173	1543
293	221	2696	2690	221	2814	3643	18	219	2935	1127	215	3058	696	30	215	3174	1510
294	227	2700	2663	227	2818	3615	19	226	2938	1098	221	3060	664	31	221	3176	1477
295	234	2704	2637	234	2822	3588	20	232	2941	1068	227	3062	632	1	227	3178	1444
April																	
296	240	2709	2610	240	2826	3559	21	238	2944	1038	233	3065	601	2	233	3179	1411
297	246	2713	2584	246	2830	3531	22	244	2947	1008	239	3067	569	3	239	3181	1377
298	253	2718	2558	253	2834	3503	23	251	2950	979	245	3070	537	4	245	3182	1344
299	259	2722	2531	259	2838	3475	24	257	2953	949	251	3072	505	5	251	3184	1311
300	265	2726	2504	265	2841	3447	25	263	2957	919	258	3074	475	6	257	3186	1278
301	272	2731	2488	272	2845	3419	26	269	2960	889	265	3077	444	7	263	3187	1245
302	278	2735	2452	278	2849	3391	27	276	2963	860	272	3079	413	8	270	3189	1212
303	284	2740	2425	284	2853	3362	28	282	2966	830	279	3082	383	9	277	3190	1180
304	292	2744	2400	290	2856	3334	29	288	2968	800	285	3084	351	10	283	3192	1147
305	294	2711	2369	292	2822	3302	30	290	2932	766	287	3046	315	11	285	3153	1110

TABLE XIII.

Sunrise from 23° to 27° N. Latitude.

Day of Solar year.	Lat. 23° -20" Long.			Lat. 24° -876" Long.			Days of solar months.	Lat. 25° +1736" Long.			Lat. 26° +2264" Long.			Eng. date.	Lat. 27° +15° Long.		
	Eqn. of time in seconds.			Eqn. of Time in seconds.				Eqn. of time in seconds.			Eqn. of Time in seconds.				Eqn. of Time in seconds.		
	☉'s Trop. Long. in seconds.	Total Corr. in seconds.	Indore.	☉'s Trop. Long. in seconds.	Total Corr. in seconds.	Anhilwad.		☉'s Trop. Long. in seconds.	Total Corr. in seconds.	Benares.	☉'s Trop. Long. in seconds.	Total Corr. in seconds.	Patna		☉'s Trop. Long. in seconds.	Total Corr. in seconds.	
	A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920		
306	-297	-2678	-2339	-295	-2787	-3270	1	-293	-2896	-733	-290	-3009	-281	12	-288	-3114	-10
307	300	2646	2310	297	2753	3238	2	295	2860	699	292	2971	245	13	290	3074	10
308	303	2613	2280	300	2718	3206	3	298	2824	666	295	2933	210	14	293	3035	10
309	305	2580	2249	302	2684	3174	4	300	2788	632	297	2895	173	15	295	2996	9
310	308	2547	2219	305	2650	3143	5	303	2752	599	300	2858	140	16	298	2957	9
311	311	2514	2189	307	2615	3110	6	305	2716	565	302	2820	104	17	300	2918	8
312	314	2482	2160	310	2581	3081	7	308	2680	532	305	2782	69	18	303	2878	8
313	316	2449	2129	312	2546	3046	8	310	2644	498	307	2745	34	19	305	2839	7
314	319	2416	2099	315	2512	3015	9	313	2608	465	310	2707	+ 1	20	308	2800	7
315	322	2383	2070	317	2478	2981	10	315	2572	431	312	2669	36	21	310	2761	7
316	325	2350	2015	320	2443	2924	11	318	2536	372	315	2632	97	22	313	2722	6
317	327	2318	1960	322	2409	2867	12	320	2500	313	317	2594	159	23	315	2682	6
318	330	2285	1905	325	2374	2810	13	323	2464	254	320	2556	220	24	318	2643	5
319	333	2252	1851	327	2340	2753	14	325	2428	194	322	2518	282	25	320	2604	4
320	336	2219	1796	330	2306	2696	15	328	2392	135	325	2481	343	26	323	2565	4
321	338	2196	1740	332	2271	2638	16	330	2356	76	327	2443	404	27	325	2526	3
322	341	2154	1686	335	2237	2582	17	333	2320	17	330	2405	465	28	328	2486	2
323	344	2121	1631	337	2202	2524	18	335	2284	+ 43	332	2368	527	1	330	2447	2
324	347	2088	1577	340	2168	2468	19	338	2248	101	335	2330	588	2	333	2408	1
325	349	2055	1521	342	2134	2410	20	340	2212	161	337	2292	650	3	335	2369	10
326	352	2022	1466	345	2099	2353	21	343	2176	220	340	2255	711	4	338	2330	4
327	355	1990	1412	347	2065	2296	22	345	2140	279	342	2217	773	5	340	2290	+ 1
328	358	1957	1357	350	2030	2239	23	348	2104	338	345	2179	834	6	343	2251	8
329	360	1924	1302	353	1996	2183	24	350	2068	398	347	2141	896	7	345	2212	14
330	363	1891	1247	356	1962	2126	25	353	2032	457	350	2104	957	8	348	2173	20
331	366	1858	1192	359	1927	2069	26	355	1996	516	352	2066	1018	9	350	2134	27
332	369	1826	1138	362	1893	2013	27	358	1960	575	355	2028	1080	10	353	2094	33
333	371	1793	1082	365	1858	1956	28	361	1924	634	357	1991	1141	11	355	2055	39
334	374	1760	1028	368	1824	1900	29	364	1888	702	360	1953	1202	12	357	2016	46
335	376	1728	972	371	1788	1843	1	367	1852	751	363	1916	1263	13	359	1976	52
336	376	1670	914	371	1728	1783	2	367	1790	813	363	1852	1327	14	359	1910	59
337	377	1613	858	372	1669	1725	3	368	1729	873	364	1788	1390	15	360	1844	65
338	377	1555	800	372	1609	1665	4	368	1667	935	364	1724	1454	16	360	1778	72
339	378	1498	744	373	1550	1607	5	369	1605	996	365	1660	1517	17	361	1712	78
340	378	1440	680	373	1490	1547	6	369	1543	1058	365	1596	1571	18	361	1646	85
341	379	1382	629	374	1430	1488	7	370	1482	1118	366	1533	1643	19	362	1581	91
342	379	1325	572	374	1371	1429	8	370	1420	1180	366	1469	1707	20	362	1515	98
343	380	1267	515	375	1311	1370	9	371	1358	1240	367	1405	1770	21	363	1449	105
344	380	1210	456	375	1252	1311	10	371	1297	1300	367	1341	1830	22	363	1383	111
345	381	1152	401	376	1192	1252	11	372	1235	1364	368	1277	1896	23	364	1317	118
346	381	1094	343	376	1132	1192	12	372	1173	1426	368	1213	1960	24	364	1251	124
347	382	1037	287	377	1073	1134	13	373	1112	1486	369	1149	2003	25	365	1185	131
348	382	979	229	377	1013	1074	14	373	1050	1548	369	1085	2087	26	365	1119	137
349	383	922	173	378	954	1016	15	374	988	1609	370	1021	2150	27	366	1053	144
350	383	864	115	378	894	956	16	374	926	1670	370	957	2213	28	366	987	150
351	384	806	58	379	834	897	17	375	865	1731	371	894	2276	29	367	922	157
352	384	749	1	379	775	838	18	375	803	1793	371	829	2340	30	367	856	163
353	385	691	+ 56	380	715	779	19	376	741	1854	372	766	2403	31	368	790	170
354	385	634	113	380	656	720	20	376	670	1945	372	702	2467	1	368	724	176
355	386	576	170	381	596	661	21	377	618	1976	373	638	2530	2	369	658	183
356	386	518	225	381	536	601	22	377	556	2038	373	574	2594	3	369	592	190
357	387	461	284	382	477	543	23	378	495	2098	374	510	2657	4	370	526	196
358	387	403	342	382	417	483	24	378	433	2160	374	446	2721	5	370	460	203
359	388	346	398	383	358	425	25	379	371	2221	375	382	2784	6	371	394	209
360	388	288	456	383	298	365	26	379	309	2282	375	318	2847	7	371	328	216
361	389	230	513	384	238	306	27	380	248	2243	376	255	2910	8	372	263	222
362	389	173	570	384	179	247	28	380	186	2405	376	191	2974	9	372	197	229
363	390	115	627	385	119	188	29	381	125	2466	377	127	3037	10	373	131	235
364	390	58	684	385	60	129	30	381	63	2527	377	64	3101	11	373	65	242
365	391	0	741	386	0	70	31	382	0	2588	378	0	3164	12	374	0	248

TABLE XIII.

Sunrise from 28° to 32° N. Latitude.

Solar year.	Lat. 28° +450'' Long.			Lat. 29° +352'' Long.			Days of solar months.	Lat. 30° +152'' Long.			Lat. 31° +332'' Long.			Lat. 32° -348'' Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Mathura.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Delhi.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Patiala.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Simla.	Eng. date.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Lahore.
	A.D. 1840—1920			A.D. 1840—1920				A.D. 1840—1920			A.D. 1840—1920				A.D. 1840—1920		
1	-367	+ 68	+1523	-362	+ 70	+1462	1	-357	+ 72	+1315	-353	+ 75	+1544	13	-348	+ 77	+ 917
2	364	136	1594	360	140	1534	2	355	145	1390	351	149	1620	14	346	154	998
3	363	204	1663	359	210	1605	3	354	217	1463	350	224	1696	15	345	230	1073
4	362	272	1732	358	280	1676	4	353	290	1537	348	298	1772	16	344	307	1151
5	360	341	1803	356	351	1748	5	351	362	1611	347	373	1848	17	342	384	1230
6	359	409	1872	354	421	1820	6	349	434	1685	345	447	1924	18	340	461	1309
7	357	477	1942	352	491	1893	7	348	507	1759	343	522	2001	19	339	538	1387
8	355	545	2012	351	561	1964	8	346	580	1833	341	596	2077	20	337	614	1465
9	353	613	2082	348	631	2037	9	344	652	1907	339	671	2154	21	335	691	1544
10	351	681	2153	346	701	2110	10	342	724	1982	337	745	2231	22	333	768	1623
11	348	749	2197	344	771	2155	11	339	796	2029	335	820	2280	23	330	845	1674
12	346	817	2240	342	841	2199	12	337	869	2076	333	894	2328	24	328	922	1725
13	344	885	2283	339	911	2245	13	335	941	2122	331	969	2374	25	326	998	1775
14	341	953	2327	337	981	2290	14	332	1014	2170	328	1013	2426	26	324	1075	1866
15	338	1022	2370	334	1051	2335	15	329	1086	2217	325	1118	2476	27	321	1152	1877
16	335	1090	2414	331	1122	2381	16	327	1158	2264	323	1192	2525	28	318	1229	1929
17	333	1158	2457	328	1192	2427	17	324	1231	2311	320	1267	2574	29	316	1306	1979
18	330	1226	2501	324	1262	2474	18	322	1303	2358	318	1341	2623	30	314	1382	2030
19	327	1294	2545	322	1332	2518	19	320	1376	2404	316	1416	2671	1	312	1459	2080
20	325	1362	2588	320	1402	2563	20	318	1448	2451	314	1490	2720	2	310	1536	2131
21	323	1430	2631	318	1472	2608	21	316	1520	2497	312	1565	2769	3	308	1613	2181
22	321	1498	2674	316	1542	2652	22	314	1593	2544	310	1639	2817	4	306	1690	2232
23	319	1566	2717	314	1612	2697	23	312	1665	2590	308	1714	2866	5	304	1766	2282
24	317	1634	2760	312	1682	2742	24	310	1738	2637	306	1788	2914	6	302	1843	2333
25	315	1703	2802	310	1752	2786	25	308	1810	2683	304	1863	2963	7	300	1920	2383
26	313	1771	2845	308	1822	2831	26	306	1882	2740	302	1937	3012	8	298	1997	2434
27	311	1839	2888	306	1893	2876	27	304	1955	2776	300	2012	3060	9	296	2074	2484
28	309	1907	2931	304	1963	2921	28	302	2027	2823	298	2086	3117	10	294	2150	2535
29	307	1975	2974	302	2033	2965	29	300	2099	2869	296	2161	3157	11	292	2227	2585
30	305	2044	3017	300	2104	3010	30	298	2172	2916	294	2236	3206	12	290	2304	2636
31	303	2085	3060	298	2147	3055	1	296	2216	2962	292	2283	3255	13	288	2352	2686
32	301	2126	3103	296	2189	3099	2	294	2261	3009	290	2329	3303	14	286	2401	2737
33	299	2167	3146	294	2232	3144	3	292	2305	3055	288	2373	3352	15	284	2449	2783
34	297	2208	3189	292	2275	3189	4	290	2350	4002	286	2422	3400	16	282	2498	2838
35	295	2248	3231	290	2317	3233	5	288	2394	3148	284	2469	3449	17	280	2546	2888
36	293	2289	3274	288	2360	3278	6	286	2439	3195	282	2516	3498	18	278	2595	2939
37	291	2330	3317	286	2403	3301	7	284	2483	3241	280	2562	3546	19	276	2643	2989
38	289	2371	3360	284	2446	3368	8	282	2528	3288	278	2609	3593	20	274	2692	3040
39	284	2412	3406	281	2488	3413	9	278	2572	3336	275	2655	3644	21	272	2740	3090
40	278	2453	3453	275	2531	3462	10	273	2617	3386	270	2702	3694	22	267	2789	3144
41	273	2494	3499	270	2574	3510	11	267	2661	3437	264	2749	3748	23	262	2837	3198
42	266	2535	3505	264	2616	3516	12	261	2706	3444	258	2795	3755	24	256	2886	3206
43	261	2576	3509	258	2659	3522	13	256	2750	3449	253	2842	3762	25	250	2934	3215
44	255	2617	3514	252	2702	3528	14	250	2795	3456	247	2888	3769	26	245	2983	3222
45	249	2657	3519	246	2744	3533	15	244	2839	3463	241	2935	3777	27	239	3031	3230
46	243	2698	3523	241	2787	3538	16	238	2884	3469	236	2982	3783	28	233	3080	3238
47	237	2739	3528	234	2830	3545	17	232	2928	3476	229	3028	3792	29	227	3128	3247
48	231	2780	3533	228	2873	3551	18	226	2973	3483	223	3075	3799	30	221	3177	3255
49	224	2821	3539	222	2915	3557	19	220	3017	3490	217	3121	3807	31	215	3225	3263
50	218	2862	3544	216	2958	3563	20	214	3062	3496	211	3168	3814	1	209	3274	3272
51	211	2903	3550	209	3001	3570	21	207	3106	3504	205	3215	3822	2	203	3322	3280
52	205	2944	3555	203	3043	3576	22	201	3151	3511	199	3261	3829	3	197	3371	3288
53	198	2985	3561	196	3086	3582	23	194	3195	3518	192	3308	3838	4	190	3419	3298
54	192	3026	3566	190	3129	3588	24	188	3240	3525	186	3354	3845	5	184	3468	3306
55	185	3066	3572	183	3171	3595	25	181	3284	3533	179	3401	3854	6	178	3516	3314
56	182	3107	3573	181	3214	3597	26	179	3329	3535	176	3448	3858	7	174	3565	3320
57	178	3148	3576	177	3257	3601	27	175	3373	3540	173	3494	3863	8	170	3613	3327
58	174	3189	3579	173	3300	3605	28	171	3418	3545	170	3541	3867	9	166	3662	3333
59	170	3230	3582	169	3342	3609	29	167	3462	3550	167	3587	3870	10	162	3710	3339
60	166	3271	3585	165	3385	3612	30	163	3507	3554	164	3634	3876	11	158	3759	3346
61	162	3312	3588	161	3428	3616	31	159	3552	3559	161	3680	3881	12	154	3808	3352
62	158	3311	3591	157	3428	3620	32	155	3553	3564	158	3681	3885	13	150	3810	3358

Sunrise from 28° to 32° N. Latitude.

Day of Solar year	Lat. 28° +460'' Long.			Lat. 29° +352'' Long.			Days of solar months.	Lat. 30° +152'' Long.			Lat. 31° +332'' Long.			Eng. date.	Lat. 32° +320'' Long.		
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Mathura.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Delhi.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Patiala.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Simla.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds.
		A.D. 1840— 1920			A.D. 1840— 1920			A.D. 1840— 1920			A.D. 1840— 1920			A.D. 1840— 1920			A.D. 1840— 1920
63	-154	+3310	+3594	-153	+3428	+3624	1	-151	+3553	+3567	-153	+3683	+3890	14	-146	+3813	+3833
64	150	3309	3597	149	3428	3628	2	147	3554	3573	146	3684	3899	15	142	3815	3833
65	141	3308	3605	140	3427	3637	3	140	3555	3581	139	3686	3909	16	139	3817	3833
66	132	3306	3612	131	3427	3646	4	131	3555	3590	131	3687	3918	17	130	3819	3833
67	123	3305	3620	123	3427	3654	5	122	3556	3600	122	3689	3929	18	121	3822	3833
68	114	3304	3628	114	3427	3663	6	113	3557	3609	113	3690	3939	19	113	3824	3834
69	105	3303	3636	105	3427	3672	7	104	3558	3619	104	3692	3950	20	104	3826	3834
70	96	3302	3644	96	3427	3681	8	96	3558	3628	95	3693	3960	21	95	3829	3834
71	87	3301	3653	87	3427	3690	9	87	3559	3637	86	3695	3970	22	86	3831	3834
72	78	3300	3628	78	3427	3663	10	78	3560	3610	77	3696	3943	23	77	3833	3834
73	69	3299	3603	69	3426	3638	11	69	3560	3584	69	3698	3915	24	68	3836	3833
74	60	3298	3578	60	3426	3612	12	59	3561	3558	59	3699	3888	25	59	3838	3833
75	52	3297	3552	52	3426	3585	13	52	3562	3530	51	3701	3860	26	51	3840	3833
76	41	3295	3529	41	3426	3561	14	41	3562	3505	41	3702	3834	27	41	3842	3833
77	32	3294	3505	32	3426	3536	15	32	3563	3479	32	3704	3807	28	32	3845	3833
78	23	3293	3480	23	3426	3510	16	23	3564	3452	23	3705	3780	29	23	3847	3833
79	14	3292	3455	14	3426	3484	17	14	3565	3426	14	3707	3752	30	14	3849	3833
80	5	3291	3430	5	3425	3459	18	5	3565	3399	5	3708	3725	1	5	3852	3833
81	+ 4	3290	3405	+ 4	3425	3433	19	+ 4	3566	3373	+ 4	3710	3698	2	+ 4	3854	3833
82	13	3289	3380	13	3425	3407	20	13	3567	3346	13	3711	3672	3	13	3856	3833
83	22	3288	3355	22	3425	3382	21	22	3567	3320	22	3713	3644	4	22	3859	3833
84	32	3287	3331	32	3425	3357	22	31	3568	3293	31	3714	3616	5	31	3861	3833
85	41	3286	3306	41	3425	3331	23	41	3569	3268	41	3716	3590	6	41	3863	3833
86	50	3284	3281	50	3425	3305	24	50	3569	3241	49	3717	3562	7	49	3865	3833
87	59	3283	3257	59	3425	3280	25	58	3570	3214	58	3719	3535	8	58	3868	3833
88	68	3282	3232	68	3424	3254	26	68	3570	3188	67	3720	3508	9	67	3870	3833
89	77	3281	3207	77	3424	3228	27	77	3571	3162	76	3722	3480	10	76	3872	3833
90	86	3280	3182	86	3424	3203	28	85	3572	3134	85	3723	3453	11	85	3875	3833
91	109	3280	3171	109	3424	3191	29	109	3572	3123	110	3724	3442	12	110	3876	3833
92	119	3246	3147	119	3389	3166	30	120	3536	3098	120	3688	3416	13	120	3839	3833
93	129	3212	3123	129	3355	3142	31	130	3501	3073	130	3652	3390	14	131	3802	3833
94	139	3178	3099	140	3320	3118	32	140	3465	3047	140	3615	3363	15	141	3765	3833
95	149	3144	3075	150	3285	3093	1	150	3430	3022	150	3579	3337	16	151	3728	3833
96	159	3110	3051	160	3250	3068	2	160	3394	2996	161	3543	3312	17	161	3691	3833
97	169	3077	3028	170	3216	3044	3	170	3359	2971	171	3507	3286	18	171	3654	3833
98	179	3043	3004	180	3181	3019	4	180	3323	2945	181	3471	3260	19	181	3617	3833
99	189	3009	2980	190	3146	2994	5	191	3288	2921	191	3434	3233	20	192	3580	3833
100	199	2975	2956	199	3112	2969	6	200	3252	2894	201	3398	3207	21	201	3543	3833
101	209	2941	2932	209	3077	2944	7	210	3217	2869	210	3362	3180	22	211	3508	3833
102	218	2907	2906	219	3042	2919	8	220	3181	2844	220	3326	3152	23	221	3469	3833
103	228	2873	2875	229	3008	2886	9	229	3146	2808	230	3290	3115	24	231	3432	3833
104	238	2839	2844	238	2973	2852	10	239	3110	2774	240	3253	3078	25	241	3395	3833
105	247	2805	2812	248	2938	2820	11	249	3075	2739	249	3217	3041	26	250	3358	3833
106	257	2771	2781	257	2903	2786	12	258	3039	2703	259	3181	3004	27	260	3321	3833
107	266	2738	2749	266	2869	2752	13	267	3004	2667	268	3145	2966	28	269	3284	3833
108	275	2704	2718	276	2834	2719	14	277	2968	2633	277	3109	2928	29	278	3247	3833
109	284	2670	2686	285	2799	2685	15	286	2933	2597	287	3072	2891	30	287	3210	3833
110	293	2636	2654	294	2765	2652	16	295	2897	2561	296	3036	2854	31	296	3173	3833
111	302	2602	2622	303	2730	2618	17	304	2862	2526	304	3000	2815	1	305	3136	3833
112	311	2568	2590	312	2695	2584	18	313	2826	2490	314	2964	2778	2	314	3099	3833
113	320	2534	2558	320	2661	2549	19	321	2791	2453	322	2928	2739	3	323	3062	3833
114	329	2500	2526	330	2626	2516	20	330	2755	2418	331	2891	2701	4	332	3025	3833
115	337	2466	2493	338	2591	2482	21	339	2720	2382	340	2855	2664	5	341	2988	3833
116	345	2432	2460	346	2556	2447	22	347	2684	2345	348	2819	2625	6	349	2951	3833
117	353	2399	2437	354	2522	2412	23	355	2649	2308	357	2783	2587	7	358	2914	3833
118	362	2365	2396	363	2487	2378	24	364	2613	2273	365	2747	2548	8	366	2877	3833
119	370	2331	2363	371	2452	2343	25	372	2578	2236	373	2710	2509	9	374	2840	3833
120	378	2297	2330	379	2418	2309	26	380	2542	2199	381	2674	2471	10	382	2803	3833
121	394	2263	2305	396	2383	2283	27	399	2507	2175	402	2638	2445	11	390	2766	3833
122	402	2228	2272	405	2348	2249	28	407	2472	2137	410	2600	2406	12	413	2728	3833
123	409	2187	2238	413	2305	2214	29	415									

Tamil, Ani; Malayalam, Mithunam; Bengal, Ashada.

Tamil, Adi; Malayalam, Karkatagam; Bengal, Sravana.

June

July

August

TABLE XIII.

Sunrise from 28° to 32° N. Latitude.

Day of Solar year.	Lat. 28° +460'' Long.			Lat. 29° +352'' Long.			Days of solar months.	Lat. 30° +152'' Long.			Lat. 31° +332'' Long.			Eng. date.	Lat. 32° —348'' Long.		
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Mathura.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Delhi.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Patiala.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Simla.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Lahore.
	A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920		
126	+433	+2064	+2139	+436	+2177	+2109	1	+438	+2293	+1989	+441	+2413	+2250	16	+444	+2533	+1653
127	440	2023	2105	444	2134	2074	2	445	2248	1952	449	2366	2211	17	452	2484	1612
128	447	1983	2072	451	2091	2038	3	453	2204	1915	456	2319	2171	18	459	2435	1570
129	454	1942	2038	458	2048	2002	4	460	2159	1877	463	2272	2131	19	466	2386	1528
130	461	1901	2004	465	2006	1967	5	467	2114	1839	470	2226	2092	20	473	2338	1487
131	467	1860	1969	471	1963	1930	6	474	2070	1802	477	2179	2052	21	480	2289	1445
132	473	1819	1933	477	1920	1893	7	481	2025	1765	484	2132	2012	22	487	2240	1403
133	480	1778	1908	484	1877	1856	8	488	1980	1735	491	2085	1980	23	494	2191	1369
134	486	1737	1882	490	1834	1837	9	494	1936	1705	497	2038	1948	24	500	2142	1334
135	492	1696	1855	496	1792	1809	10	500	1891	1674	503	1992	1915	25	506	2094	1300
136	498	1655	1829	502	1749	1781	11	506	1846	1644	509	1945	1883	26	512	2045	1265
137	504	1614	1803	508	1706	1752	12	512	1801	1613	515	1898	1850	27	518	1996	1230
138	510	1574	1777	514	1663	1724	13	518	1757	1583	521	1851	1817	28	524	1947	1195
139	516	1533	1751	520	1620	1696	14	524	1712	1552	527	1804	1785	29	530	1898	1160
140	521	1492	1723	525	1578	1667	15	529	1667	1521	532	1758	1751	30	535	1850	1125
141	526	1451	1696	530	1535	1637	16	534	1624	1489	538	1711	1719	31	541	1801	1090
142	531	1410	1669	535	1492	1608	17	539	1578	1458	543	1664	1685	1	546	1752	1054
143	536	1369	1642	540	1449	1579	18	544	1533	1426	548	1617	1651	2	551	1703	1018
144	541	1328	1615	545	1406	1549	19	549	1489	1395	553	1570	1618	3	556	1654	982
145	546	1287	1587	550	1364	1520	20	554	1444	1363	558	1524	1584	4	561	1606	947
146	550	1246	1559	554	1321	1490	21	558	1399	1331	562	1477	1550	5	566	1557	911
147	554	1205	1531	558	1278	1459	22	562	1354	1298	566	1430	1515	6	571	1508	875
148	556	1165	1501	560	1235	1427	23	564	1310	1264	568	1383	1478	7	574	1459	837
149	558	1124	1471	562	1192	1395	24	566	1265	1229	570	1336	1442	8	576	1410	798
150	560	1083	1440	564	1150	1363	25	568	1220	1195	572	1290	1405	9	578	1362	760
151	562	1042	1410	566	1107	1330	26	570	1176	1160	574	1243	1369	10	580	1313	721
152	564	1000	1380	568	1064	1298	27	572	1132	1126	576	1196	1332	11	582	1264	682
153	566	968	1350	570	1020	1265	28	574	1095	1091	578	1157	1295	12	584	1223	643
154	568	936	1320	572	995	1233	29	576	1059	1057	580	1119	1259	13	586	1182	604
155	570	903	1289	574	961	1191	30	578	1022	1022	582	1080	1222	14	588	1142	566
156	572	871	1259	576	927	1169	31	580	986	988	585	1042	1187	15	590	1101	527
157	574	839	1229	578	892	1136	1	583	949	954	587	1003	1150	16	592	1060	488
158	577	807	1200	581	858	1105	2	586	913	921	590	964	1114	17	595	1019	450
159	579	775	1170	583	824	1073	3	588	876	886	592	926	1078	18	597	978	411
160	581	742	1139	585	790	1041	4	590	840	852	594	887	1041	19	599	938	373
161	583	710	1109	587	755	1008	5	592	803	817	596	849	1005	20	601	897	334
162	584	678	1078	589	721	976	6	593	767	782	597	810	967	21	602	856	294
163	586	646	1046	590	687	942	7	595	730	747	599	771	931	22	604	815	256
164	588	614	1015	592	652	909	8	597	694	711	601	733	893	23	606	774	216
165	589	581	982	593	618	874	9	598	657	675	602	694	854	24	607	734	175
166	589	549	949	593	584	839	10	598	621	637	602	656	814	25	607	693	133
167	590	517	917	594	549	804	11	599	584	600	603	617	775	26	608	652	92
168	591	485	885	595	515	770	12	600	548	564	604	578	737	27	609	611	51
169	592	453	852	596	481	735	13	601	511	527	605	540	698	28	610	570	9
170	592	420	819	596	447	700	14	601	475	489	605	501	658	29	610	530	— 33
171	592	388	786	596	412	664	15	601	438	451	605	463	618	30	610	489	75
172	592	356	752	596	378	629	16	601	402	414	605	424	578	1	610	448	117
173	592	324	709	596	343	593	17	601	365	376	605	385	538	2	610	407	159
174	592	292	686	596	309	558	18	601	329	338	605	347	498	3	610	366	201
175	592	259	652	596	275	522	19	601	292	301	605	308	458	4	610	326	243
176	592	227	619	596	241	487	20	601	256	263	605	270	418	5	610	285	285
177	591	195	585	595	206	450	21	600	219	224	604	231	377	6	609	244	328
178	590	163	557	594	172	414	22	599	183	186	603	192	337	7	608	203	371
179	589	131	516	593	138	377	23	598	146	147	602	154	296	8	607	162	415
180	588	98	482	592	104	341	24	597	110	108	601	115	255	9	606	122	458
181	586	66	447	590	69	303	25	595	73	68	599	77	213	10	604	81	502
182	585	34	412	589	35	267	26	594	37	30	598	38	172	11	603	40	545
183	584	0	378	588	0	230	27	593	0	— 9	598	0	132	12	603	0	587
184	582	— 33	343	586	— 35	193	28	591	— 38	49	596	— 40	90	13	601	— 42	631
185	580	67	307	584	71	155	29	589	75	88	594	80	48	14	599	84	675
186	578	100	272	582	106	118	30	587	113	128	592	120	6	15	597	126	719

TABLE XIII.

Sunrise from 28° to 32° N. Latitude.

Day of Solar year.	Lat. 28° +460'' Long.			Lat. 29° +352'' Long.			Days of solar months.	Lat. 30° +152'' Long.			Lat. 31° +332'' Long.			Eng. date.	Lat. 32° —34'' Long.		
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Mathura.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Delhi.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Patiala.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Simla.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds.
			A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920			A.D. 1840— 1920	
187	576	—133	+237	+580	—142	+ 80	1	+585	—151	—168	+590	—160	— 36	16	+595	—168	—76
188	578	166	201	577	177	42	2	582	188	208	587	199	78	17	592	210	80
189	570	200	164	574	213	3	3	579	226	249	584	239	121	18	589	253	88
190	567	233	128	571	248	— 35	4	576	264	290	581	279	164	19	586	295	89
191	564	266	92	568	284	74	5	573	302	331	578	319	207	20	583	337	94
192	561	300	55	565	319	112	6	570	339	371	575	359	250	21	580	379	98
193	557	333	17	561	355	151	7	566	377	414	571	399	293	22	576	421	102
194	554	366	— 27	558	390	197	8	563	415	462	568	439	343	23	573	463	106
195	550	400	72	554	426	244	9	559	452	510	564	479	394	24	569	505	114
196	546	433	117	550	461	290	10	555	490	559	560	519	444	25	565	547	119
197	542	466	162	546	497	337	11	551	528	608	556	559	495	26	561	589	124
198	538	499	206	542	532	384	12	547	565	656	552	598	546	27	557	631	129
199	534	533	251	538	568	431	13	543	603	705	548	638	597	28	553	674	135
200	529	566	297	533	603	499	14	538	641	755	543	678	649	29	548	716	140
201	524	599	343	528	639	520	15	533	679	805	538	718	700	30	543	758	145
202	520	633	388	524	674	573	16	529	716	853	534	758	751	31	539	800	151
203	515	666	434	519	710	621	17	524	754	903	529	798	803	1	534	842	156
204	509	699	481	513	745	670	18	518	792	954	523	838	856	2	528	884	162
205	504	733	527	508	781	718	19	513	829	1003	518	878	908	3	523	926	167
206	499	766	573	503	816	765	20	508	867	1053	513	918	959	4	518	968	172
207	495	799	618	499	852	812	21	504	905	1102	509	958	1010	5	514	1010	178
208	489	832	664	493	887	861	22	498	942	1152	503	997	1063	6	508	1052	183
209	483	866	711	487	923	910	23	492	980	1203	497	1037	1116	7	502	1095	189
210	477	899	758	481	958	959	24	486	1018	1254	491	1077	1169	8	496	1137	194
211	471	932	805	477	994	1005	25	480	1056	1305	485	1117	1221	9	490	1179	198
212	468	966	849	473	1029	1052	26	474	1093	1355	479	1157	1275	10	483	1221	205
213	465	1000	893	469	1064	1099	27	473	1132	1401	478	1196	1322	11	481	1264	210
214	462	1041	937	465	1107	1136	28	467	1177	1452	471	1243	1376	12	474	1313	216
215	455	1082	985	458	1150	1196	29	460	1221	1503	464	1290	1430	13	467	1362	221
216	448	1123	1033	451	1192	1245	30	453	1266	1555	457	1336	1483	14	460	1410	227
217	441	1164	1081	444	1235	1295	1	446	1311	1607	450	1383	1537	15	453	1459	233
218	434	1204	1128	437	1276	1345	2	439	1355	1658	443	1430	1591	16	446	1508	238
219	426	1245	1177	429	1321	1396	3	431	1400	1711	435	1477	1646	17	438	1557	244
220	419	1286	1225	422	1364	1446	4	424	1445	1763	428	1524	1700	18	431	1606	249
221	411	1327	1315	414	1406	1496	5	416	1490	1816	420	1570	1758	19	423	1654	255
222	403	1368	1365	406	1449	1567	6	408	1534	1868	412	1617	1809	20	415	1703	261
223	395	1409	1373	398	1492	1598	7	400	1579	1920	404	1664	1864	21	407	1752	266
224	387	1450	1407	390	1535	1641	8	392	1624	1963	396	1711	1908	22	399	1801	271
225	379	1491	1457	382	1578	1683	9	384	1668	2007	388	1758	1952	23	391	1850	275
226	371	1532	1499	374	1620	1726	10	376	1713	2050	380	1804	1997	24	383	1898	280
227	362	1573	1462	365	1663	1770	11	367	1758	2095	371	1851	2042	25	374	1947	285
228	354	1613	1583	357	1706	1812	12	359	1802	2138	363	1898	2087	26	366	1996	289
229	345	1654	1626	348	1749	1856	13	350	1847	2183	354	1945	2131	27	357	2045	294
230	336	1695	1669	339	1792	1900	14	341	1892	2227	345	1992	2176	28	348	2094	298
231	327	1736	1712	330	1834	1944	15	332	1937	2272	336	2038	2222	29	339	2142	303
232	318	1777	1735	321	1877	1987	16	323	1981	2316	327	2085	2267	30	330	2191	307
233	309	1818	1798	312	1920	2031	17	314	2026	2361	318	2132	2312	1	321	2240	312
234	299	1859	1842	302	1963	2076	18	304	2071	2406	308	2179	2358	2	311	2289	317
235	290	1900	1885	293	2006	2119	19	295	2115	2451	299	2226	2403	3	302	2338	321
236	281	1941	1928	284	2048	2159	20	286	2160	2495	290	2272	2449	4	293	2386	326
237	272	1982	1971	275	2091	2207	21	277	2205	2540	281	2319	2494	5	284	2435	331
238	262	2022	2014	265	2134	2251	22	267	2249	2585	271	2366	2540	6	274	2484	336
239	252	2063	2058	255	2177	2296	23	257	2294	2631	261	2413	2586	7	264	2533	340
240	243	2104	2101	246	2220	2340	24	248	2339	2675	252	2460	2631	8	255	2582	344
241	233	2145	2165	236	2262	2385	25	238	2384	2721	242	2506	2678	9	244	2630	348
242	223	2186	2189	226	2305	2429	26	228	2428	2766	232	2553	2724	10	234	2679	352
243	207	2228	2239	208	2348	2482	27	208	2472	2822	209	2600	2783	11	210	2728	356
244	198	2262	2282	199	2383	2526	28	199	2507	2866	200	2636	2828	12	201	2765	360
245	188	2296	2326	189	2417	2570	29	189	2543	2912	190	2672	2867	13	191	2802	364
246	178	2330	2370	179	2452	2615	30	179	2578	2957	180	2709	2921	14	181	2839	370

TABLE XIII.

Sunrise from 28° to 32° N. Latitude.

Day of Solar year.	Lat. 28° +460'' Long.			Lat. 29° +352'' Long.			Days of solar months.	Lat. 30° +152'' Long.			Lat. 31° +332'' Long.			Lat. 32° -348'' Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Mathura.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Delhi.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Patiala.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Simla.	Eng. date.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corn. in seconds. Lahore.
	A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920						A.D. 1840— 1920
247	+168	-2364	-2414	+169	-2487	-2660	1	+169	-2614	-3003	+170	-2745	-2962	15	+171	-2876	-3793
248	158	2397	2457	159	2521	2704	2	159	2649	3048	160	2781	3013	16	161	2913	3840
249	148	2431	2501	149	2556	2749	3	149	2685	3094	150	2817	3059	17	151	2950	3887
250	138	2465	2545	139	2591	2794	4	139	2720	3139	140	2853	3105	18	141	2987	3934
251	128	2499	2589	129	2626	2839	5	129	2756	3185	130	2890	3152	19	131	3024	3981
252	118	2533	2633	119	2660	2883	6	119	2791	3230	120	2926	3198	20	121	3061	4028
253	108	2567	2677	109	2695	2929	7	109	2827	3276	110	2962	3244	21	111	3098	4075
254	98	2601	2722	99	2730	2973	8	99	2862	3321	100	2998	3292	22	101	3135	4123
255	88	2635	2733	89	2764	2983	9	89	2898	3330	90	3034	3300	23	91	3172	4131
256	78	2669	2744	79	2799	2993	10	79	2933	3340	80	3071	3309	24	81	3209	4136
257	68	2703	2775	69	2834	3003	11	69	2969	3349	70	3107	3317	25	71	3246	4146
258	58	2736	2766	59	2868	3013	12	59	3004	3358	60	3143	3326	26	61	3283	4154
259	47	2770	2778	48	2903	3025	13	48	3040	3368	49	3179	3335	27	50	3320	4162
260	37	2804	2790	38	2938	3035	14	38	3075	3378	39	3215	3344	28	40	3357	4170
261	27	2838	2801	28	2973	3045	15	28	3111	3387	29	3252	3352	29	30	3394	4178
262	17	2872	2812	18	3007	3055	16	18	3146	3396	19	3288	3361	30	20	3431	4186
263	2	2906	2828	2	3042	3071	17	2	3182	3412	2	3324	3376	31	4	3468	4199
264	-11	2940	2842	-11	3077	3084	18	-11	3217	3424	-11	3360	3388	1	-12	3505	4213
265	21	2974	2853	21	3111	3094	19	21	3253	3433	21	3396	3396	2	28	3542	4226
266	35	3008	2868	36	3146	3110	20	36	3288	3448	37	3433	3412	3	-38	3579	4234
267	45	3042	2879	46	3181	3120	21	46	3324	3457	47	3469	3421	4	48	3616	4242
268	55	3075	2890	56	3215	3130	22	56	3359	3466	57	3505	3429	5	58	3653	4250
269	66	3109	2902	67	3250	3141	23	67	3395	3476	68	3541	3439	6	69	3690	4258
270	76	3143	2914	77	3285	3151	24	77	3430	3486	78	3577	3447	7	79	3727	4266
271	87	3177	2926	88	3320	3162	25	88	3466	3496	89	3614	3457	8	90	3764	4275
272	97	3211	2937	98	3354	3172	26	98	3501	3505	99	3650	3465	9	100	3801	4283
273	107	3245	2948	108	3390	3182	27	108	3537	3515	109	3686	3474	10	110	3838	4290
274	100	3280	2942	100	3424	3173	28	100	3572	3506	98	3724	3460	11	98	3876	4275
275	106	3281	2949	106	3424	3181	29	106	3571	3511	104	3722	3464	12	104	3874	4280
276	112	3282	2956	112	3424	3187	1	112	3571	3517	110	3721	3469	13	110	3871	4283
277	118	3283	2963	118	3424	3193	2	118	3570	3522	116	3719	3473	14	116	3869	4287
278	124	3284	2970	124	3424	3199	3	124	3569	3526	122	3718	3478	15	122	3867	4291
279	130	3285	2977	130	3425	3205	4	130	3568	3532	128	3716	3482	16	128	3864	4294
280	136	3287	2985	136	3425	3211	5	136	3568	3537	134	3715	3487	17	134	3862	4298
281	142	3288	2992	142	3425	3217	6	142	3567	3543	140	3713	3491	18	140	3860	4302
282	148	3289	2999	148	3425	3224	7	148	3566	3548	146	3712	3496	19	146	3858	4306
283	154	3290	3006	154	3425	3230	8	154	3566	3554	152	3710	3500	20	152	3855	4309
284	160	3291	2992	160	3425	3236	9	160	3565	3560	158	3709	3506	21	158	3853	4314
285	166	3292	2977	166	3425	3199	10	166	3564	3523	164	3707	3465	22	164	3856	4271
286	172	3293	2942	172	3426	3163	11	172	3564	3483	170	3706	3425	23	170	3848	4229
287	178	3294	2907	178	3426	3126	12	178	3563	3444	176	3704	3384	24	176	3846	4186
288	184	3295	2872	184	3426	3089	13	184	3562	3406	182	3703	3344	25	182	3844	4144
289	190	3296	2837	190	3426	3052	14	190	3561	3367	188	3701	3303	26	188	3841	4101
290	196	3298	2803	196	3426	3016	15	196	3561	3329	194	3700	3262	27	194	3839	4059
291	202	3299	2768	202	3426	2979	16	202	3560	3290	200	3698	3222	28	200	3837	4016
292	208	3300	2733	208	3426	2942	17	208	3559	3252	206	3697	3181	29	206	3835	3974
293	214	3301	2698	214	3426	2906	18	214	3559	3213	212	3695	3141	30	212	3832	3931
294	220	3302	2663	220	3426	2869	19	220	3558	3175	218	3694	3100	31	218	3830	3889
295	226	3303	2628	226	3427	2832	20	226	3557	3136	224	3692	3059	1	223	3828	3845
296	232	3304	2593	232	3427	2796	21	232	3557	3098	230	3691	2999	2	229	3825	3803
297	238	3305	2558	238	3427	2759	22	238	3556	3059	235	3689	2977	3	234	3823	3759
298	244	3306	2523	244	3427	2722	23	244	3555	3021	240	3688	2936	4	239	3821	3716
299	250	3307	2488	250	3427	2685	24	250	3554	2992	245	3686	2894	5	244	3818	3672
300	256	3309	2454	256	3427	2649	25	255	3554	2943	250	3685	2852	6	249	3816	3631
301	262	3310	2419	262	3427	2612	26	260	3553	2903	255	3683	2807	7	254	3814	3585
302	268	3311	2384	268	3428	2575	27	265	3552	2864	260	3682	2769	8	260	3812	3543
303	274	3312	2349	273	3428	2538	28	270	3552	2824	266	3680	2729	9	265	3809	3499
304	280	3312	2314	278	3428	2500	29	276	3552	2786	272	3680	2688	10	270	3808	3456
305	282	3271	2275	280	3385	2459	30	278	3507	2743	274	3633	2643	11	272	3759	3419

TABLE XIII.

Sunrise from 28° to 32° N. Latitude.

Day of Solar year.	Lat. 28° +460'' Long.			Lat. 29° +352'' Long.			Days of solar months.	Lat. 30° +152'' Long.			Lat. 31° +332'' Long.			Lat. 32° -302'' Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Mathura.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Delhi.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Patiala.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds. Simla.	Eng. date.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Cornn. in seconds.
			A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920
306	-285	-3230	-2237	-283	-3343	-2420	1	-280	-3463	-2701	-276	-3587	-2599	12	-274	-3711	-336
307	287	3189	2198	285	3300	2379	2	283	3418	2659	279	3540	2556	13	276	3662	331
308	290	3148	2160	288	3257	2339	3	285	3374	2617	281	3494	2511	14	278	3614	327
309	292	3107	2121	290	3214	2298	4	287	3329	2574	283	3447	2466	15	281	3565	322
310	295	3067	2084	293	3172	2264	5	290	3285	2533	286	3400	2422	16	283	3517	317
311	297	3026	2045	295	3129	2218	6	292	3240	2490	288	3354	2378	17	285	3468	313
312	300	2985	2007	298	3086	2168	7	294	3196	2448	290	3307	2333	18	287	3420	308
313	302	2944	1968	300	3044	2138	8	297	3151	2406	293	3261	2290	19	289	3371	303
314	305	2903	1930	303	3001	2098	9	299	3107	2364	295	3214	2245	20	292	3323	299
315	307	2862	1891	305	2958	2057	10	301	3062	2321	297	3167	2201	21	294	3274	294
316	310	2821	1826	308	2916	1990	11	304	3018	2252	300	3121	2129	22	296	3226	287
317	312	2780	1760	310	2873	1922	12	306	2973	2181	302	3074	2057	23	298	3177	279
318	315	2739	1695	313	2830	1855	13	308	2929	2111	304	3028	1984	24	300	3129	272
319	317	2698	1629	315	2787	1787	14	311	2884	2041	307	2981	1913	25	303	3080	264
320	320	2658	1567	318	2745	1719	15	313	2840	1971	309	2934	1840	26	305	3032	257
321	322	2617	1497	320	2702	1651	16	315	2795	1901	311	2888	1768	27	307	2983	249
322	325	2576	1432	323	2659	1584	17	318	2751	1831	314	2841	1696	28	309	2935	242
323	327	2535	1366	325	2617	1515	18	320	2706	1761	316	2795	1624	1	311	2866	234
324	330	2494	1301	328	2574	1449	19	322	2662	1690	318	2748	1551	2	314	2838	227
325	332	2453	1235	330	2531	1381	20	325	2617	1621	321	2701	1480	3	316	2789	220
326	335	2412	1170	332	2489	1313	21	327	2573	1551	323	2655	1407	4	318	2741	212
327	337	2371	1104	334	2446	1245	22	329	2528	1480	325	2608	1335	5	320	2692	205
328	340	2330	1039	336	2403	1177	23	331	2484	1410	327	2562	1264	6	322	2644	197
329	342	2289	973	338	2360	1109	24	333	2439	1339	329	2515	1190	7	324	2595	190
330	345	2249	908	340	2318	1040	25	335	2395	1269	331	2468	1117	8	326	2547	182
331	347	2208	841	342	2275	972	26	337	2350	1199	333	2422	1045	9	328	2498	185
332	349	2167	775	344	2232	904	27	339	2306	1128	335	2375	972	10	330	2450	167
333	351	2126	709	346	2190	836	28	341	2261	1058	337	2329	900	11	332	2401	160
334	353	2085	643	348	2147	768	29	343	2217	987	339	2282	827	12	334	2353	152
335	355	2044	577	350	2104	700	1	345	2172	917	341	2236	755	13	336	2304	145
336	355	1976	509	350	2034	630	2	345	2100	845	341	2161	680	14	336	2227	137
337	356	1908	442	351	1964	561	3	346	2027	773	342	2087	607	15	337	2150	129
338	356	1840	374	351	1894	491	4	346	1955	701	342	2012	532	16	337	2074	122
339	357	1772	307	352	1824	422	5	347	1882	629	343	1938	459	17	338	1997	114
340	357	1704	239	352	1753	351	6	347	1810	557	343	1863	384	18	338	1920	107
341	358	1635	171	353	1683	282	7	348	1738	486	344	1789	311	19	339	1843	99
342	358	1567	103	353	1613	212	8	348	1665	413	344	1714	236	20	339	1766	91
343	359	1499	36	354	1543	143	9	349	1593	342	345	1640	153	21	340	1690	84
344	359	1431	+ 32	354	1473	73	10	349	1520	269	345	1565	88	22	340	1613	76
345	360	1363	100	355	1403	3	11	350	1448	198	346	1491	14	23	341	1536	68
346	360	1295	168	355	1333	+ 66	12	350	1376	126	346	1416	+ 61	24	341	1459	61
347	361	1227	235	356	1263	135	13	351	1303	54	347	1342	134	25	342	1382	53
348	361	1159	303	356	1193	205	14	351	1231	+ 18	347	1267	209	26	342	1306	46
349	362	1091	370	357	1123	274	15	352	1158	90	348	1193	282	27	343	1229	38
350	362	1023	439	357	1052	346	16	352	1086	162	348	1118	357	28	343	1152	30
351	363	954	506	357	982	415	17	352	1014	234	349	1044	430	29	344	1175	23
352	363	886	574	358	912	485	18	353	941	306	349	969	505	30	344	998	15
353	364	818	641	358	842	554	19	353	869	379	349	895	579	31	344	922	7
354	364	750	709	358	772	626	20	353	796	451	350	820	653	1	345	845	0
355	365	682	776	359	702	694	21	354	724	522	350	746	727	2	345	768	+ 7
356	365	614	844	359	632	765	22	354	652	594	350	671	802	3	345	691	15
357	366	546	911	360	562	833	23	354	579	667	351	597	875	4	346	614	22
358	366	478	979	360	492	903	24	355	507	738	351	522	950	5	346	538	30
359	367	410	1046	360	422	973	25	355	434	821	351	448	1024	6	346	461	38
360	367	342	1115	361	351	1042	26	355	362	876	352	373	1098	7	347	384	45
361	368	273	1182	361	281	1113	27	356	290	954	352	299	1172	8	347	307	53
362	368	205	1250	361	211	1183	28	356	317	1027	352	224	1247	9	347	230	61
363	368	137	1318	362	141	1252	29	356	145	1099	353	150	1320	10	348	154	68
364	367	69	1387	362	71	1322	30	357	72	1171	353	75	1395	11	348	77	76
365	367	0	1455	362	0	1392	31	357	0	1243	353	0	1469	12	348	0	84

TABLE XIII.

Sunrise from 33° to 35° N. Latitude; also for BOMBAY and CALCUTTA.

Solar year.	Lat. 33° —480'' Long.			Lat. 34° —228'' Long.			Days of solar months.	Lat. 35° —1592'' Long.			Lat. 19° —692'' Long.			Lat. 22.5° +3020'' Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Jehlum.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Srinagar.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Kabul.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Bombay.	Eng. date.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corrn. in seconds. Calcutta.
	A.D. 1840—1920			A.D. 1840—1920				A.D. 1840—1920			A.D. 1840—1920						A.D. 1840—1920
1	—343	+ 79	+ 840	—338	+ 82	+1148	1	—333	+ 84	—161	—405	+ 50	— 47	13	—391	+ 57	+3891
2	341	158	921	336	163	1231	2	331	168	75	403	100	+ 5	14	389	113	3877
3	340	238	1002	335	245	1314	3	330	252	+ 10	401	150	57	15	387	170	3936
4	339	317	1082	334	326	1396	4	329	336	95	400	200	108	16	386	227	3993
5	337	396	1163	332	408	1480	5	328	420	180	398	250	160	17	384	283	4052
6	336	475	1243	331	490	1563	6	327	504	265	396	300	212	18	382	340	4111
7	334	554	1324	330	571	1645	7	325	588	351	394	350	264	19	380	396	4170
8	332	634	1406	328	653	1729	8	323	672	437	392	400	316	20	378	453	4229
9	330	713	1487	326	734	1812	9	321	756	523	390	450	368	21	375	510	4289
10	328	792	1568	324	816	1896	10	319	840	609	387	500	421	22	373	567	4347
11	326	871	1620	321	898	1951	11	317	924	665	385	550	450	23	371	623	4381
12	324	950	1673	319	979	2005	12	315	1008	721	382	600	479	24	369	679	4415
13	322	1030	1725	317	1061	2059	13	313	1092	778	380	650	508	25	366	736	4450
14	319	1109	1778	315	1142	2112	14	310	1176	835	377	700	538	26	363	792	4485
15	316	1188	1832	312	1224	2167	15	308	1260	891	374	750	568	27	360	850	4520
16	314	1267	1884	310	1306	2221	16	306	1344	947	371	800	597	28	357	906	4555
17	312	1346	1936	308	1387	2275	17	304	1428	1003	367	850	628	29	354	962	4590
18	310	1426	1989	306	1469	2329	18	302	1512	1059	364	900	658	30	352	1019	4624
19	308	1505	2041	304	1550	2383	19	300	1596	1116	361	950	687	1	348	1072	4660
20	306	1584	2093	302	1632	2437	20	298	1680	1172	357	1000	718	2	344	1133	4696
21	304	1663	2145	300	1714	2491	21	296	1764	1228	354	1050	748	3	341	1190	4731
22	302	1742	2198	298	1795	2544	22	294	1848	1284	350	1100	778	4	338	1246	4766
23	300	1822	2250	296	1877	2598	23	292	1932	1340	346	1150	809	5	335	1303	4801
24	298	1901	2302	294	1958	2652	24	290	2016	1397	342	1200	840	6	333	1359	4835
25	296	1980	2355	292	2040	2706	25	288	2100	1453	338	1250	870	7	330	1416	4870
26	294	2059	2407	290	2122	2760	26	286	2184	1509	334	1300	901	8	327	1473	4904
27	292	2138	2459	288	2203	2814	27	284	2268	1565	330	1350	932	9	324	1530	4940
28	290	2218	2512	286	2285	2868	28	282	2352	1621	326	1400	963	10	321	1587	4975
29	288	2297	2564	284	2366	2921	29	280	2436	1678	322	1450	993	11	318	1644	5010
30	286	2376	2616	282	2448	2975	30	278	2520	1734	318	1500	1020	12	314	1700	5026
31	284	2426	2669	280	2500	3029	1	276	2574	1790	314	1527	1020	13	311	1732	5061
32	282	2477	2721	278	2552	3083	2	274	2628	1846	310	1553	1051	14	307	1764	5097
33	280	2527	2773	276	2604	3137	3	272	2683	1902	306	1580	1083	15	304	1796	5132
34	278	2577	2826	274	2655	3201	4	270	2737	1959	302	1607	1116	16	300	1828	5168
35	276	2628	2878	272	2707	3245	5	268	2791	2015	300	1634	1147	17	296	1860	5204
36	274	2678	2930	270	2759	3299	6	266	2845	2071	298	1660	1180	18	293	1892	5239
37	272	2728	2983	268	2811	3352	7	264	2899	2127	296	1687	1213	19	289	1924	5276
38	270	2779	3035	266	2863	3406	8	262	2953	2183	294	1714	1245	20	286	1956	5313
39	269	2829	3086	264	2915	3460	9	260	3008	2240	292	1740	1277	21	283	1988	5351
40	264	2879	3142	261	2967	3515	10	258	3062	2296	290	1767	1310	22	280	2020	5389
41	260	2929	3196	258	3019	3570	11	256	3116	2352	288	1794	1343	23	276	2052	5427
42	254	2980	3205	252	3070	3580	12	250	3170	2363	286	1820	1343	24	273	2084	5428
43	247	3030	3215	245	3122	3591	13	243	3224	2375	280	1847	1342	25	270	2116	5429
44	242	3080	3224	240	3174	3600	14	237	3279	2385	274	1874	1340	26	267	2148	5430
45	236	3131	3233	234	3226	3610	15	231	3333	2396	267	1900	1341	27	260	2180	5432
46	231	3181	3241	228	3278	3620	16	226	3387	2406	261	1927	1339	28	254	2211	5434
47	224	3231	3251	222	3330	3630	17	219	3441	2418	254	1954	1339	29	247	2244	5436
48	218	3282	3260	216	3382	3640	18	213	3495	2429	247	1981	1339	30	241	2276	5437
49	212	3332	3270	210	3433	3650	19	208	3550	2438	241	2007	1338	31	235	2308	5438
50	207	3382	3278	205	3485	3659	20	203	3604	2448	234	2034	1338	1	228	2340	5440
51	201	3433	3287	199	3537	3669	21	197	3658	2459	227	2061	1338	2	221	2372	5443
52	195	3483	3296	193	3589	3679	22	191	3712	2470	220	2087	1338	3	214	2404	5445
53	188	3533	3306	186	3641	3690	23	184	3766	2482	213	2114	1338	4	207	2436	5447
54	182	3584	3316	180	3693	3700	24	178	3821	2492	206	2141	1338	5	200	2468	5449
55	176	3634	3325	177	3745	3707	25	176	3875	2499	199	2167	1336	6	193	2500	5451
56	172	3684	3332	174	3797	3714	26	172	3929	2508	192	2194	1337	7	186	2532	5454
57	169	3735	3338	171	3848	3721	27	168	3983	2517	184	2221	1338	8	179	2564	5456
58	166	3785	3344	168	3900	3728	28	164	4037	2526	177	2248	1338	9	174	2596	5456
59	163	3835	3351	165	3952	3735	29	160	4092	2534	169	2274	1339	10	168	2628	5457
60	160	3886	3357	162	4004	3742	30	156	4146	2543	162	2301	1339	11	162	2660	5458
61	157	3936	3363	159	4056	3749	31	152	4200	2552	155	2328	1315	12	157	2692	5445
62	154	3989	3369	156	4060	3756	32	148	4205	2561	148	2321	1316	13	154	2687	5447

Sunrise from 33° to 35° N. Latitude; also for BOMBAY and CALCUTTA.

Day of Solar year.	Eqn. of time in seconds.	Lat. 33° - 480"		Lat. 34° - 228"		Lat. 35° - 1592"		Lat. 19° - 692"		Lat. 22.5° - 3020"							
		Long.	Long.	Long.	Long.	Long.	Long.										
☉'s Trop. Long. in seconds.	Total Corr. in seconds. Jehlum.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Srinagar.	Days of solar months.	Eqn. of time. in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Kabul.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Bombay.	Eng. date.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds.		
A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920	A.D. 1840— 1920		
63	-151	+3942	+3375	-153	+4064	+3763	1	-144	+4210	+2570	-162	+2384	+1318	14	-159	+2682	+54
64	148	3946	3382	150	4068	3778	2	140	4214	2578	153	2306	1320	15	151	2677	54
65	138	3949	3395	138	4072	3786	3	137	4219	2589	144	2300	1322	16	143	2672	54
66	130	3952	3406	130	4076	3798	4	130	4224	2598	135	2292	1323	17	134	2668	54
67	121	3955	3418	120	4080	3812	5	120	4229	2613	126	2285	1325	18	125	2663	54
68	112	3958	3430	112	4084	3824	6	112	4234	2626	117	2278	1327	19	116	2658	54
69	103	3962	3443	103	4088	3837	7	103	4238	2639	108	2271	1329	20	107	2653	54
70	95	3965	3454	94	4092	3850	8	94	4243	2653	99	2264	1331	21	96	2648	54
71	86	3968	3466	85	4096	3863	9	85	4248	2667	89	2257	1335	22	88	2644	54
72	77	3971	3437	76	4100	3833	10	76	4253	2636	80	2250	1316	23	79	2639	54
73	68	3974	3408	68	4104	3803	11	68	4258	2605	71	2243	1297	24	70	2634	54
74	58	3978	3380	58	4108	3774	12	58	4262	2575	61	2236	1285	25	61	2629	54
75	51	3981	3343	50	4112	3743	13	50	4267	2544	53	2227	1259	26	53	2624	53
76	41	3984	3321	41	4116	3713	14	41	4272	2514	42	2221	1242	27	42	2620	53
77	32	3987	3292	32	4120	3684	15	32	4277	2483	33	2214	1223	28	33	2615	53
78	23	3990	3263	23	4124	3654	16	23	4282	2453	24	2207	1204	29	24	2610	53
79	14	3994	3234	14	4128	3624	17	14	4286	2422	15	2200	1185	30	15	2605	53
80	5	3997	3206	5	4132	3595	18	5	4291	2392	5	2193	1167	1	5	2600	52
81	+ 4	4000	3177	+ 4	4136	3565	19	+ 4	4296	2361	+ 4	2186	1148	2	+ 4	2596	52
82	13	4003	3148	13	4140	3535	20	13	4301	2331	13	2179	1129	3	13	2591	52
83	22	4006	3119	22	4144	3505	21	22	4306	2300	23	2172	1111	4	23	2586	52
84	30	4010	3089	30	4148	3475	22	30	4310	2266	32	2165	1092	5	32	2581	52
85	40	4013	3061	40	4152	3446	23	40	4315	2236	42	2158	1074	6	42	2576	51
86	49	4016	3032	48	4156	3415	24	48	4320	2203	51	2150	1055	7	51	2571	51
87	57	4019	3002	57	4160	3386	25	57	4325	2174	60	2143	1036	8	60	2567	51
88	67	4022	2974	66	4164	3356	26	66	4330	2145	70	2136	1026	9	69	2562	51
89	76	4026	2945	75	4168	3326	27	75	4334	2116	79	2129	1007	10	78	2557	51
90	84	4029	2915	84	4172	3296	28	84	4339	2086	88	2122	980	11	87	2552	50
91	110	4032	2903	111	4176	3285	29	111	4344	2073	106	2116	970	12	107	2548	50
92	121	3994	2876	121	4137	3256	30	121	4304	2044	116	2088	952	13	117	2517	50
93	131	3956	2848	132	4099	3228	31	132	4265	2015	126	2060	934	14	127	2487	50
94	141	3918	2820	141	4060	3199	32	142	4225	1986	136	2038	916	15	137	2457	50
95	151	3880	2792	151	4021	3170	1	152	4186	1956	146	2004	898	16	147	2427	49
96	162	3842	2766	162	3982	3142	2	163	4147	1928	156	1976	880	17	157	2397	49
97	172	3804	2738	172	3944	3113	3	173	4107	1898	166	1948	862	18	167	2366	49
98	182	3766	2710	182	3905	3085	4	183	4068	1869	175	1920	843	19	177	2336	49
99	192	3728	2662	193	3866	3057	5	193	4028	1839	185	1892	825	20	187	2307	49
100	202	3691	2654	202	3828	3027	6	203	3989	1810	194	1864	806	21	196	2276	48
101	211	3653	2625	212	3789	2999	7	212	3949	1779	204	1836	788	22	205	2246	48
102	221	3615	2597	222	3750	2970	8	222	3910	1750	263	1808	769	23	215	2215	48
103	231	3577	2557	232	3711	2928	9	232	3870	1706	223	1780	753	24	224	2185	48
104	242	3539	2517	243	3673	2887	10	244	3831	1663	232	1752	735	25	235	2155	48
105	251	3501	2476	252	3634	2844	11	253	3791	1618	242	1724	719	26	244	2125	47
106	261	3463	2435	262	3595	2802	12	263	3752	1573	251	1696	702	27	253	2095	47
107	270	3425	2394	271	3557	2759	13	272	3712	1528	260	1668	684	28	261	2064	47
108	278	3387	2352	279	3518	2715	14	280	3673	1482	269	1640	667	29	271	2034	47
109	288	3349	2311	288	3479	2672	15	289	3633	1436	278	1620	650	30	280	2004	46
110	297	3311	2270	297	3440	2629	16	298	3594	1391	287	1584	633	31	290	1974	46
111	305	3273	2227	305	3402	2585	17	306	3554	1344	295	1556	614	1	297	1944	46
112	315	3235	2187	316	3363	2544	18	316	3515	1300	304	1528	587	2	306	1913	46
113	324	3197	2146	325	3324	2501	19	326	3475	1257	312	1500	579	3	315	1883	46
114	333	3159	2104	334	3286	2468	20	335	3436	1210	321	1472	561	4	324	1853	45
115	342	3121	2163	343	3247	2415	21	344	3396	1165	329	1444	543	5	332	1823	45
116	350	3084	2020	351	3208	2371	22	352	3357	1118	338	1416	526	6	340	1793	45
117	359	3046	1979	360	3169	2328	23	361	3317	1073	346	1388	507	7	348	1762	45
118	367	3008	1937	368	3131	2284	24	369	3278	1027	354	1360	489	8	357	1732	44
119	375	2970	1894	376	3092	2240	25	377	3238	980	362	1332	471	9	364	1702	44
120	383	2932	1852	384	3053	2196	26	385	3199	934	369	1304	452	10	372	1672	44
121	408	2894	1898	411	3015	2171	27	414	3159	908	373	1276	429	11	381	1642	44
122	416	2856	1784	419	2976	2127	28	422	3120	862	381	1248	411	12	388	1612	43
123	424	2806	1742	427	2924	2083	29	430	3066	816	388	1222					

Tamil, Ani; Malayalam, Mithunam; Bengali, Ashada.

Tamil, Adi; Malayalam, Karkatagam; Bengali, Sravana.

June

July

August

TABLE XIII.

Sunrise from 33° to 35° N. Latitude; also for BOMBAY and CALCUTTA.

Day of Solar year.	Lat. 33°—480'' Long.			Lat. 34°—228'' Long.			Days of solar months.	Lat. 35°—1592'' Long.			Lat. 19°—692'' Long.			Lat. 22°50'—3020'' Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Jehlum.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Srinagar.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Kabul.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Bombay.	Eng. date.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Calcutta.
	A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920						
126	+447	+2654	+1613	+450	+2768	+1950	1	+453	+2902	+675	+410	+1143	+335	16	+419	+1485	+4304
127	455	2604	1571	458	2716	1906	2	461	2848	629	417	1116	315	17	425	1454	4276
128	462	2554	1528	465	2664	1861	3	468	2794	582	424	1090	296	18	432	1423	4252
129	469	2503	1484	472	2612	1816	4	475	2739	534	430	1064	276	19	439	1392	4227
130	476	2453	1441	479	2560	1771	5	482	2685	487	437	1038	257	20	446	1361	4201
131	483	2402	1397	486	2508	1726	6	489	2630	439	443	1011	236	21	452	1330	4176
132	490	2352	1354	493	2456	1681	7	496	2576	392	450	985	218	22	458	1299	4150
133	497	2302	1318	500	2404	1642	8	503	2522	351	456	959	209	23	465	1268	4136
134	503	2251	1280	506	2352	1603	9	509	2467	309	462	932	200	24	471	1237	4120
135	509	2201	1243	512	2300	1563	10	515	2413	267	468	906	192	25	477	1206	4104
136	515	2150	1206	518	2248	1523	11	521	2358	225	474	880	183	26	483	1175	4068
137	521	2100	1168	524	2196	1484	12	527	2304	183	479	853	173	27	488	1144	4072
138	527	2050	1131	530	2144	1444	13	533	2250	141	485	827	164	28	493	1113	4055
139	533	1999	1093	536	2092	1404	14	539	2195	99	490	801	154	29	500	1082	4041
140	538	1949	1055	541	2040	1364	15	544	2141	56	495	775	145	30	505	1051	4023
141	544	1898	1018	547	1988	1324	16	550	2086	14	500	748	135	31	510	1020	4007
142	549	1848	979	552	1936	1283	17	555	2032	— 29	505	722	125	1	515	989	3990
143	554	1798	941	557	1884	1242	18	560	1978	72	510	696	115	2	520	958	3974
144	559	1747	903	562	1832	1202	19	565	1923	115	514	669	104	3	525	927	3956
145	564	1697	864	567	1780	1161	20	570	1869	158	519	643	95	4	529	896	3939
146	569	1646	826	573	1728	1121	21	576	1814	200	523	617	84	5	533	865	3921
147	576	1596	790	580	1676	1083	22	585	1760	239	527	590	73	6	537	831	3904
148	578	1546	748	586	1624	1045	23	591	1706	281	532	564	63	7	541	800	3886
149	580	1495	707	592	1572	1003	24	596	1651	324	536	538	52	8	543	768	3866
150	582	1445	666	595	1520	961	25	601	1597	367	539	512	41	9	546	735	3847
151	584	1394	624	596	1468	916	26	602	1542	414	542	485	29	10	549	704	3829
152	586	1344	583	597	1416	871	27	603	1488	461	523	460	— 5	11	540	672	3798
153	588	1301	541	598	1370	827	28	604	1440	508	526	445	17	12	542	651	3779
154	590	1257	500	599	1325	782	29	605	1392	555	529	430	29	13	545	629	3760
155	592	1214	459	600	1279	737	30	606	1344	602	532	416	40	14	543	607	3736
156	594	1171	417	601	1233	693	31	607	1296	649	534	401	53	15	550	585	3721
157	596	1127	376	602	1188	648	1	608	1248	696	536	386	66	16	552	564	3701
158	599	1084	336	604	1142	604	2	609	1200	743	538	371	79	17	554	542	3672
159	601	1040	294	606	1096	561	3	610	1152	790	540	356	92	18	556	521	3662
160	603	997	253	608	1051	517	4	612	1104	836	542	342	104	19	558	498	3642
161	605	954	212	610	1005	473	5	614	1056	882	544	327	120	20	560	477	3622
162	606	910	169	611	959	429	6	615	1008	929	546	312	130	21	561	455	3602
163	608	867	128	613	913	385	7	617	960	975	547	297	145	22	563	434	3583
164	610	824	85	615	868	340	8	619	912	1023	548	282	159	23	565	412	3563
165	611	780	41	616	822	294	9	620	864	1071	550	268	173	24	566	390	3542
166	611	737	— 3	616	776	246	10	620	816	1121	551	253	187	25	566	368	3519
167	612	694	47	617	731	200	11	621	768	1169	552	238	201	26	567	347	3498
168	613	650	91	618	685	154	12	622	720	1218	553	223	215	27	567	325	3475
169	614	607	135	619	639	108	13	623	672	1267	554	208	230	28	568	303	3454
170	614	564	180	619	594	61	14	623	624	1316	554	194	245	29	569	281	3403
171	614	520	224	619	548	13	15	623	576	1366	554	179	260	30	569	260	3410
172	614	477	269	619	502	— 34	16	623	528	1415	554	164	276	1	570	238	3389
173	614	433	314	619	457	81	17	623	480	1465	554	149	291	2	569	217	3365
174	614	390	359	619	411	128	18	623	432	1515	554	134	306	3	569	195	3343
175	614	347	404	619	365	175	19	623	384	1564	554	120	322	4	569	173	3321
176	614	303	448	619	320	223	20	623	336	1614	554	105	337	5	569	151	3298
177	613	260	494	618	274	271	21	622	288	1664	553	90	353	6	568	129	3275
178	612	217	540	617	228	319	22	621	240	1715	552	75	369	7	567	108	3251
179	611	173	586	616	183	367	23	620	192	1766	551	60	386	8	566	86	3238
180	610	130	632	615	137	415	24	619	144	1816	550	46	402	9	565	64	3205
181	608	87	678	613	91	465	25	617	96	1868	548	31	419	10	563	42	3180
182	607	43	724	612	46	513	26	616	48	1918	547	16	436	11	562	21	3147
183	607	0	769	612	0	562	27	616	0	1968	545	0	453	12	561	0	3133
184	606	— 45	815	611	— 47	608	28	616	— 50	2018	544	— 15	469	13	559	— 22	3124
185	604	90	862	609	94	657	29	614	99	2069	542	31	487	14	557	44	3085
186	602	134	908	607	142	707	30	612	149	2121	540	46	504	15	555	67	3060

TABLE XIII.

Sunrise from 33° to 35° N. Latitude; also for BOMBAY and CALCUTTA.

Day of Solar year.	Lat. 33°—480'' Long.			Lat. 34°—228'' Long.			Days of solar months.	Lat. 35°—1592'' Long.			Lat. 19°—692'' Long.			Eng. date.	Lat. 22°5' +3020'' Long.		
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Jehlum.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Srinagar.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Kabul.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Bombay.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Calcutta.
	A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920		
187	+600	—179	—955	+605	—189	—756	1	+610	—198	—2173	+538	—61	—511	16	+552	—89	+3035
188	597	224	1003	602	236	806	2	607	248	2225	536	76	538	17	551	112	3011
189	604	269	1041	609	283	846	3	614	298	2268	533	92	557	18	548	134	2986
190	601	314	1091	606	330	896	4	611	347	2310	530	107	575	19	545	156	2961
191	588	358	1146	593	378	953	5	598	397	2383	527	122	593	20	542	179	2925
192	585	403	1194	590	425	1007	6	595	446	2435	524	138	612	21	538	201	2919
193	581	448	1243	586	472	1058	7	591	496	2489	521	153	631	22	535	224	2883
194	578	493	1296	583	519	1113	8	588	546	2546	518	168	660	23	532	246	2848
195	574	538	1351	579	566	1169	9	584	595	2605	515	184	690	24	529	268	2814
196	570	582	1405	575	614	1225	10	580	645	2663	511	199	720	25	525	291	2778
197	566	627	1460	571	661	1281	11	576	694	2722	507	214	750	26	521	313	2741
198	562	672	1514	567	708	1337	12	572	744	2780	503	229	780	27	517	336	2696
199	558	717	1568	563	755	1393	13	568	794	2838	499	245	811	28	513	358	2670
200	553	762	1624	558	802	1450	14	563	843	2898	494	260	842	29	508	380	2633
201	548	806	1679	553	850	1507	15	558	893	2957	490	275	872	30	503	403	2596
202	544	851	1734	549	897	1563	16	553	942	3017	486	291	909	31	499	425	2560
203	539	896	1789	544	944	1620	17	549	992	3075	481	306	934	1	494	448	2523
204	533	941	1845	538	991	1678	18	543	1042	3135	476	321	965	2	489	455	2486
205	528	986	1901	533	1038	1735	19	538	1091	3195	471	337	997	3	484	492	2449
206	523	1030	1956	528	1086	1792	20	533	1141	3254	466	352	1028	4	479	515	2412
207	519	1075	2011	524	1133	1848	21	529	1191	3313	462	367	1057	5	475	537	2376
208	513	1120	2067	518	1180	1906	22	523	1240	3373	457	382	1089	6	469	560	2338
209	507	1165	2123	512	1227	1964	23	517	1290	3433	451	398	1122	7	463	582	2300
210	501	1210	2180	506	1274	2022	24	511	1339	3494	446	413	1153	8	458	604	2263
211	495	1254	2236	500	1322	2080	25	505	1389	3554	440	428	1185	9	452	627	2225
212	488	1299	2294	493	1369	2139	26	498	1438	3616	434	444	1216	10	450	649	2191
213	484	1344	2348	487	1416	2197	27	490	1488	3678	428	460	1235	11	448	672	2157
214	477	1394	2405	480	1468	2256	28	483	1542	3739	423	476	1267	12	445	704	2122
215	470	1445	2463	473	1520	2315	29	476	1597	3801	420	513	1301	13	440	735	2186
216	463	1495	2520	466	1572	2374	30	469	1651	3862	423	539	1334	14	433	767	2046
217	456	1546	2578	459	1624	2433	1	462	1706	3924	416	565	1367	15	426	800	2007
218	449	1596	2635	452	1676	2492	2	455	1760	3975	409	591	1400	16	419	831	1969
219	441	1646	2693	444	1728	2552	3	447	1814	4047	402	618	1434	17	412	863	1930
220	434	1697	2751	437	1780	2611	4	440	1869	4109	395	644	1467	18	405	895	1891
221	426	1747	2809	429	1832	2671	5	432	1923	4171	388	670	1500	19	397	927	1850
222	418	1798	2868	421	1884	2731	6	424	1978	4234	381	697	1534	20	389	959	1811
223	410	1848	2926	413	1936	2791	7	416	2032	4296	374	723	1566	21	382	991	1778
224	402	1898	2972	405	1988	2838	8	408	2086	4343	366	749	1602	22	374	1023	1734
225	394	1949	3018	397	2040	2884	9	400	2141	4391	358	776	1638	23	366	1055	1695
226	386	1999	3064	389	2092	2931	10	392	2195	4438	350	802	1674	24	358	1087	1657
227	377	2050	3111	380	2144	2979	11	383	2250	4487	342	828	1710	25	350	1119	1629
228	369	2100	3157	372	2196	3025	12	375	2304	4534	334	854	1746	26	341	1151	1599
229	360	2150	3204	363	2248	3073	13	366	2358	4583	326	881	1782	27	333	1183	1560
230	351	2201	3250	354	2300	3121	14	357	2413	4631	317	907	1819	28	324	1215	1521
231	342	2251	3297	345	2352	3169	15	348	2467	4680	309	933	1855	29	316	1247	1483
232	333	2302	3344	336	2404	3216	16	339	2522	4728	301	960	1891	30	307	1279	1444
233	324	2352	3391	327	2456	3264	17	330	2576	4777	293	986	1927	1	299	1311	1405
234	314	2402	3439	317	2508	3313	18	320	2630	4826	284	1012	1964	2	290	1343	1366
235	305	2453	3486	308	2560	3360	19	311	2685	4875	275	1039	2001	3	281	1374	1327
236	296	2503	3533	299	2612	3408	20	302	2739	4923	266	1065	2038	4	272	1407	1288
237	287	2554	3580	290	2664	3456	21	293	2794	4972	257	1091	2075	5	263	1439	1249
238	277	2604	3628	280	2716	3505	22	283	2848	5021	248	1117	2112	6	254	1470	1209
239	267	2654	3676	270	2768	3553	23	273	2902	5071	239	1144	2149	7	245	1502	1170
240	258	2705	3723	261	2820	3601	24	264	2957	5119	230	1170	2186	8	236	1534	1131
241	246	2755	3773	248	2872	3653	25	251	3011	5172	220	1196	2224	9	226	1567	1091
242	236	2806	3821	238	2924	3701	26	241	3066	5221	211	1223	2261	10	216	1598	1051
243	211	2856	3884	212	2976	3766	27	213	3120	5287	203	1248	2297	11	205	1630	1009
244	202	2894	3931	203	3015	3814	28	204	3159	5337	194	1276	2334	12	196	1660	970
245	192	2932	3979	193	3053	3863	29	194	3199	5387	184	1304	2372	13	186	1691	930
246	182	2970	4026	183	3092	3911	30	184	3238	5436	174	1332	2410	14	176	1721	890

TABLE XIII.

Sunrise from 33° to 35° N. Latitude; also for BOMBAY and CALCUTTA.

Day of Solar year.	Lat. 33° —480" Long.				Lat. 34° —228" Long.				Lat. 35° —1592" Long.				Lat. 19° —692" Long.				Lat. 22.5° +3020" Long.			
	Eqn. of time in seconds.				Eqn. of time in seconds.				Eqn. of time in seconds.				Eqn. of time in seconds.				Eqn. of time in seconds.			
	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Jehlum.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Srinagar.	Days of solar months.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Kabul.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Bombay.	Eng. date.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Calcutta.	Eng. date.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Calcutta.	Eng. date.				
	A.D. 1840—1920					A.D. 1840—1920					A.D. 1840—1920					A.D. 1840—1920				
247	+172	—3008	—4074	+173	—3131	—3960	1	+174	—3278	—5486	+164	—1360	—2448	15	+166	—1741	+850			
248	162	3046	4122	163	3169	4009	2	164	3317	5535	154	1388	2486	16	156	1762	809			
249	152	3084	4170	153	3208	4057	3	154	3357	5585	144	1416	2524	17	146	1793	769			
250	142	3121	4218	143	3247	4106	4	144	3396	5634	134	1444	2562	18	135	1823	728			
251	132	3159	4266	133	3286	4155	5	134	3436	5683	124	1472	2600	19	125	1853	688			
252	122	3197	4314	123	3324	4204	6	124	3475	5733	114	1500	2638	20	115	1883	648			
253	112	3235	4362	113	3363	4252	7	114	3515	5782	104	1528	2676	21	105	1914	607			
254	102	3273	4410	103	3402	4301	8	104	3554	5832	94	1556	2714	22	95	1944	567			
255	92	3311	4417	93	3440	4307	9	94	3594	5837	84	1584	2731	23	85	1974	553			
256	82	3349	4424	83	3479	4313	10	84	3633	5842	74	1612	2754	24	75	2004	538			
257	72	3387	4430	73	3518	4319	11	74	3673	5848	64	1640	2765	25	65	2034	525			
258	62	3425	4437	63	3557	4325	12	64	3712	5853	54	1668	2782	26	55	2065	508			
259	51	3463	4445	52	3595	4332	13	53	3752	5859	44	1696	2799	27	44	2095	492			
260	41	3501	4452	42	3634	4338	14	43	3791	5864	34	1724	2817	28	34	2125	478			
261	31	3539	4459	32	3673	4344	15	33	3831	5869	24	1752	2834	29	24	2155	463			
262	21	3577	4465	22	3711	4350	16	23	3870	5875	14	1780	2851	30	14	2185	448			
263	11	3615	4472	12	3750	4356	17	13	3910	5880	2	1808	2868	31	2	2216	431			
264	— 19	3653	4499	— 20	3789	4384	18	— 21	3949	5909	— 10	1836	2891	1	— 11	2246	414			
265	29	3691	4506	30	3828	4390	19	31	3989	5914	20	1864	2908	2	21	2276	399			
266	39	3728	4513	40	3866	4396	20	41	4028	5919	32	1892	2925	3	32	2306	383			
267	49	3766	4519	50	3905	4402	21	51	4068	5925	41	1920	2941	4	42	2336	368			
268	59	3804	4526	60	3944	4408	22	61	4107	5930	51	1948	2958	5	52	2367	353			
269	70	3842	4534	71	3982	4415	23	72	4147	5936	61	1976	2975	6	63	2397	337			
270	80	3880	4541	81	4021	4421	24	82	4186	5941	70	2004	2992	7	73	2427	323			
271	91	3918	4549	92	4060	4428	25	93	4225	5947	81	2032	3010	8	84	2457	307			
272	92	3956	4546	93	4099	4425	26	94	4265	5944	91	2060	3027	9	94	2487	292			
273	93	3994	4544	94	4137	4422	27	95	4304	5940	101	2088	3044	10	100	2518	281			
274	98	4032	4546	97	4176	4421	28	97	4344	5937	102	2116	3062	11	102	2548	274			
275	103	4029	4548	102	4172	4422	29	102	4339	5937	109	2123	3066	12	107	2552	265			
276	109	4026	4551	108	4168	4424	1	107	4334	5937	115	2130	3079	13	114	2557	253			
277	115	4022	4553	114	4164	4426	2	113	4330	5939	122	2137	3093	14	120	2561	243			
278	120	4019	4555	119	4160	4427	3	119	4325	5940	129	2144	3107	15	127	2567	231			
279	126	4016	4558	125	4156	4429	4	124	4320	5940	135	2151	3120	16	133	2572	221			
280	132	4013	4561	131	4152	4431	5	130	4315	5941	142	2159	3135	17	140	2576	210			
281	137	4010	4563	136	4148	4432	6	136	4310	5942	149	2166	3149	18	146	2581	199			
282	143	4006	4565	142	4144	4434	7	141	4306	5943	155	2173	3172	19	152	2586	188			
283	149	4003	4568	148	4140	4436	8	146	4301	5943	162	2180	3176	20	159	2591	176			
284	154	4000	4570	153	4136	4437	9	152	4296	5944	169	2187	3189	21	165	2595	166			
285	160	3997	4526	159	4132	4391	10	158	4291	5896	175	2194	3168	22	171	2600	190			
286	166	3994	4481	165	4128	4345	11	163	4286	5847	182	2201	3149	23	178	2605	212			
287	171	3990	4436	170	4124	4298	12	168	4282	5797	189	2208	3129	24	184	2610	240			
288	177	3987	4392	176	4120	4252	13	174	4277	5749	195	2215	3108	25	190	2615	266			
289	183	3984	4347	182	4116	4201	14	180	4272	5701	202	2222	3088	26	197	2620	291			
290	188	3981	4302	187	4112	4160	15	185	4267	5652	209	2230	3069	27	204	2624	316			
291	194	3978	4258	193	4108	4114	16	191	4262	5604	215	2237	3048	28	210	2629	352			
292	200	3974	4213	199	4104	4068	17	197	4258	5555	222	2244	3028	29	216	2634	368			
293	205	3971	4168	204	4100	4021	18	202	4253	5506	229	2251	3009	30	222	2639	394			
294	211	3968	4124	210	4096	3975	19	207	4248	5457	235	2258	2988	31	229	2644	419			
295	216	3965	4078	216	4092	3929	20	213	4242	5409	242	2265	2968	1	236	2648	444			
296	222	3962	4034	221	4088	3882	21	219	4238	5361	249	2272	2949	2	242	2653	470			
297	228	3958	3990	227	4084	3837	22	224	4234	5311	255	2279	2928	3	248	2657	496			
298	233	3955	3944	233	4080	3791	23	229	4229	5262	262	2286	2908	4	255	2662	521			
299	239	3952	3900	238	4076	3744	24	235	4224	5214	269	2295	2888	5	261	2666	547			
300	245	3949	3856	244	4072	3698	25	241	4219	5166	275	2301	2868	6	268	2670	572			
301	250	3946	3810	249	4068	3651	26	246	4214	5111	282	2308	2848	7	274	2675	598			
302	256	3942	3766	254	4064	3604	27	251	4210	5067	289	2315	2828	8	280	2680	624			
303	262	3939	3722	259	4060	3557	28	256	4205	5018	295	2322	2808	9	286	2685	650			
304	267	3936	3676	264	4056	3511	29	261	4200	4969	302	2328	2788	10	293	2689	675			
305	269	3886	3628	266	4004	3461	30	263	4146	4917	305	2301	2764	11	296	2659	701			

TABLE XIII.

Sunrise from 33° to 35° N. Latitude; also for BOMBAY and CALCUTTA.

Day of Solar year.	Lat. 33°—480'' Long.			Lat. 34°—228'' Long.			Days of solar months.	Lat. 35°—1592'' Long.			Lat. 19°—692'' Long.			Lat. 22°5' + 3020'' Long.			
	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Jehlum.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Srinagar.		Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Kabul.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds. Bombay.	Eng. date.	Eqn. of time in seconds.	☉'s Trop. Long. in seconds.	Total Corr. in seconds.
			A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920			A.D. 1840— 1920				A.D. 1840— 1920
306	—271	—3835	—3580	—268	—3952	—3411	1	—265	—4092	—4865	—308	—2275	—2741	12	—299	—2628	+73
307	273	3785	3532	270	3900	3361	2	267	4037	4812	311	2263	2717	13	302	2596	76
308	275	3735	3483	272	3848	3311	3	269	3983	4760	314	2221	2693	14	305	2564	79
309	277	3684	3435	274	3797	3261	4	271	3929	4708	317	2194	2669	15	308	2532	82
310	280	3634	3388	277	3745	3212	5	273	3875	4656	320	2168	2646	16	310	2500	85
311	282	3584	3339	279	3693	3162	6	275	3821	4604	323	2141	2622	17	313	2468	87
312	284	3533	3291	281	3641	3113	7	277	3766	4552	326	2114	2598	18	316	2436	90
313	286	3483	3243	283	3589	3063	8	279	3712	4499	329	2088	2575	19	319	2404	93
314	288	3433	3194	285	3537	3013	9	281	3658	4447	332	2061	2551	20	322	2372	96
315	290	3382	3146	287	3485	2963	10	283	3604	4395	335	2034	2527	21	325	2340	99
316	293	3332	3070	289	3433	2883	11	285	3550	4313	338	2008	2482	22	328	2308	104
317	295	3282	2993	291	3382	2804	12	287	3495	4231	341	1981	2439	23	331	2276	110
318	297	3231	2915	293	3330	2724	13	289	3441	4149	344	1954	2396	24	334	2244	115
319	299	3181	2838	295	3278	2645	14	291	3387	4067	347	1927	2351	25	337	2212	121
320	301	3131	2761	297	3226	2585	15	293	3333	3985	350	1901	2308	26	340	2180	126
321	303	3080	2684	299	3174	2485	16	295	3279	3903	353	1874	2263	27	342	2148	131
322	306	3030	2608	301	3122	2406	17	297	3224	3821	356	1847	2218	28	345	2116	137
323	308	2980	2530	303	3070	2326	18	299	3170	3739	359	1821	2173	1	348	2084	142
324	310	2929	2453	305	3019	2247	19	301	3116	3657	362	1794	2104	2	351	2052	147
325	312	2879	2376	307	2967	2167	20	303	3062	3575	365	1767	2057	3	353	2020	153
326	314	2829	2299	309	2915	2087	21	305	3008	3493	368	1741	2010	4	356	1988	158
327	316	2779	2222	311	2863	2008	22	307	2953	3411	371	1714	1963	5	359	1956	164
328	318	2728	2144	313	2811	1928	23	309	2899	3329	374	1687	1916	6	361	1924	169
329	320	2678	2067	315	2759	1849	24	311	2845	3247	377	1660	1869	7	364	1892	174
330	322	2628	1990	317	2707	1769	25	313	2791	3165	380	1634	1822	8	366	1860	180
331	324	2577	1913	319	2655	1689	26	315	2737	3083	383	1607	1775	9	369	1828	185
332	326	2527	1836	321	2604	1610	27	317	2683	3001	385	1580	1727	10	371	1796	191
333	328	2477	1758	323	2552	1530	28	319	2628	2919	387	1554	1679	11	373	1764	206
334	330	2426	1681	325	2500	1451	29	321	2574	2837	389	1527	1631	12	375	1732	202
335	332	2376	1604	327	2448	1371	1	323	2520	2755	391	1500	1583	13	377	1700	207
336	332	2297	1525	327	2366	1289	2	323	2436	2671	391	1450	1534	14	377	1643	213
337	332	2218	1446	327	2285	1208	3	323	2352	2587	392	1400	1484	15	378	1587	218
338	333	2138	1367	328	2203	1127	4	324	2268	2504	392	1350	1434	16	378	1530	230
339	333	2059	1288	328	2122	1046	5	324	2184	2420	393	1300	1385	17	380	1473	235
340	333	1980	1209	328	2040	964	6	324	2100	2336	393	1250	1335	18	380	1416	241
341	334	1901	1131	329	1958	883	7	325	2016	2253	394	1200	1286	19	381	1360	246
342	334	1822	1052	329	1877	802	8	325	1932	2169	394	1150	1236	20	381	1303	252
343	334	1742	972	329	1795	720	9	325	1848	2085	395	1100	1187	21	382	1246	258
344	335	1663	891	330	1714	640	10	326	1764	2002	395	1050	1137	22	382	1190	263
345	335	1584	815	330	1632	558	11	326	1680	1918	396	1000	1088	23	383	1133	267
346	335	1505	736	330	1550	476	12	326	1596	1834	396	950	1038	24	383	1076	269
347	336	1426	658	331	1469	396	13	327	1512	1751	397	900	989	25	384	1020	274
348	336	1346	578	331	1387	314	14	327	1423	1667	397	850	939	26	384	963	280
349	336	1267	499	331	1306	233	15	327	1344	1583	398	800	890	27	385	907	286
350	337	1188	421	332	1224	152	16	328	1260	1500	398	750	840	28	385	850	291
351	337	1109	342	332	1142	70	17	328	1176	1416	399	700	791	29	386	793	297
352	337	1030	263	332	1061	11	18	328	1092	1332	399	650	741	30	386	737	303
353	338	950	184	333	979	+ 92	19	329	1008	1249	400	600	692	31	387	679	308
354	338	871	105	333	898	173	20	329	924	1165	400	550	642	1	387	624	314
355	338	792	26	333	816	255	21	329	840	1081	401	500	593	2	388	567	319
356	339	713	+ 52	334	734	336	22	330	756	998	401	450	543	3	388	510	325
357	339	634	131	334	653	417	23	330	672	914	402	400	494	4	389	454	331
358	339	554	201	334	571	499	24	330	588	830	402	350	444	5	389	397	336
359	340	475	289	335	490	579	25	331	504	747	403	300	395	6	390	340	342
360	340	396	368	335	408	661	26	331	420	663	403	250	345	7	390	283	348
361	340	317	447	335	326	743	27	331	336	579	404	200	296	8	391	227	353
362	341	238	525	336	245	823	28	332	252	496	404	150	246	9	391	171	359
363	341	158	605	336	163	905	29	332	168	412	405	100	197	10	392	114	364
364	341	79	684	336	82	986	30	332	84	328	405	50	147	11	392	57	370
365	342	0	762	337	0	1067	31	333	0	245	405	0	97	12	392	0	376

TABLE XIII—A.

Latitudes and Longitudes of Chief places in British India and the Feudatory States.

(Longitudes are expressed by the difference in Seconds of time as compared with Ujjain.)

Serial No.	District.	Town.	Latitude in degrees & decimals of a degree.	Time difference in Seconds.	Serial No.	District.	Town.	Latitude in degrees & decimals of a degree.	Time difference in Seconds.
BRITISH TERRITORY.					Bombay Province—(continued).				
Aden Province.					37 Nasik	Nasik	20.0	— 480	
1 Aden	...	Aden	12.7	—7348	38 Panch Mahal	Godhra	22.7	— 520	
Ajmere—Merwara Province.					39 Poona	Poona	18.5	— 464	
2 Ajmere	...	Ajmere	26.5	— 280	40 Sholapur	Sholapur	17.7	+ 28	
		Nazirabad	26.3	— 256		Pandharpur	17.7	— 84	
3 Merwara	...	Beawar	26.0	— 352		Barsi	18.2	— 24	
		(Nayanagar)			41 Satara	Satara	17.7	— 428	
Baluchistan Province.					42 Surat	Surat	12.2	— 708	
4 Quetta—Peshin	...	Quetta	30.2	—2104	43 Thana	Bandra	19.0	— 708	
Bengal Province.					Burma Province.				
5 Balasore	...	Balasore	21.5	+2676	44 Akyab	Akyab	20.2	+4112	
6 Bankura	...	Bankura	23.2	+2708	45 Amherst	Moulmein	16.5	+5244	
7 Bhagalpur	...	Bhagalpur	25.2	+2692	46 Bassein	Bassein	16.7	+4556	
8 Burdwan	...	Burdwan	23.2	+2896	47 Henzada	Henzada	17.7	+4732	
		Howrah	22.5	+3016	48 Mandalay	Mandalay	22.0	+4876	
9 Champaram	...	Bettiah	26.5	+2092	49 Prome	Prome	18.8	+4664	
10 Cuttack	...	Cuttack	20.5	+2420	50 Rangoon	Rangoon	16.7	+4896	
11 Darbhanga	...	Darbhangha	26.2	+2428	51 Tavoy	Tavoy	14.1	+5380	
12 Gaya	...	Gaya	24.5	+2216	Central Provinces.				
13 Hooghly	...	Hoogly and Chinsura	23.0	+3028	52 Jubbalpore	Jubbalpore	23.2	+1000	
		Serampore	22.7	+3016	53 Nagpur	Kamptee	21.2	+ 820	
14 Midnapore	...	Midnapore	22.5	+2768		Nagpur	21.2	+ 800	
15 Monghyr	...	Monghyr	25.3	+2564	54 Nimar	Burhanpur	21.3	+ 108	
16 Murshidabad	...	Berhampore	24.0	+2996	55 Raipur	Raipur	21.2	+1408	
17 Muzaftarpur	...	Hajipur	25.7	+2260	56 Saugor	Saugor	23.8	+ 712	
		Muzaftarpur	26.0	+2308	Eastern Bengal & Assam Province.				
18 Nadia	...	Krishnagar	23.5	+3056	57 Chittagong	Chittagong	23.3	+3852	
		Santipur	23.2	+3040	58 Decca	Decca	23.7	+3508	
		Calcutta				{ Narayanganj }			
19 Twenty-four Parganas	...	Cossipur-Chitpur	22.5	+3020	59 Manipur	Imphal	24.8	+4360	
		Garden Reach			60 Pabna	Sirajganj	24.5	+3352	
		Maniktala			61 Rajshahi	Rampur-Bolia	24.3	+3076	
		Naihati	23.0	+3032	Madras Province.				
		Baranagar	22.7	+3020	62 Bellary	Adoni	15.7	+ 360	
		Bhatpara	23.0	+3032		Bellary	15.2	+ 256	
20 Patna	...	Patna	25.7	+2252	63 Chingleput	Conjeeveram	12.8	+ 940	
		Bihar	25.2	+2336	64 Coimbatore	Coimbatore	11.0	+ 284	
		Dinapore	25.7	+2224	65 Ganjam	Berhampore	19.3	+2164	
21 Puri	...	Puri	19.8	+2408	66 Godaveri	Cocanada	17.0	+1548	
22 Ranchi	...	Ranchi	23.3	+2292		Rajahmundry	17.0	+1436	
23 Saran	...	Chapra	25.8	+2148	67 Kistna	Bezwada	16.5	+1160	
24 Shahabad	...	Sasaram	25.0	+1976		Ellore	16.7	+1280	
		Arrah	25.5	+2132		Masulipatam	16.2	+1284	
Berar Province.					68 Guntur	Guntur	16.3	+1124	
25 Akola	...	Akola	20.7	+ 300	69 Kurnool	Kurnool	15.8	+ 548	
26 Amraoti	...	Amraoti	21.0	+ 480	70 Madras	Madras	13.0	+1072	
27 Ellichpur	...	Ellichpur	21.2	+ 424	71 Madura	Madura	10.0	+ 560	
Bombay Province.						Bodinayakkanur	10.0	+ 376	
28 Ahmadabad	...	Ahmadabad	23.0	— 768		Dindigul	10.3	+ 528	
29 Ahmadnagar	...	Ahmadnagar	19.0	— 208	72 Malabar	Calicut	11.2	+ 0	
30 Belgaum	...	Belgaum	16.0	— 304		Cannanore	11.8	— 100	
31 Bijapur	...	Bijapur	16.8	— 16		Palghat	10.8	+ 208	
32 Bombay	...	Bombay	19.0	— 692		Tellicherry	11.7	— 72	
33 Broach	...	Broach	21.7	— 672	73 Nellore	Nellore	14.5	+1008	
34 Dharwar	...	Hubli	15.3	— 152	74 North Arcot	Gudiyattam	13.0	+ 744	
		Dharwar	15.5	— 184		Vellore	12.9	+ 808	
		Gadag	15.5	— 36	75 Salem	Salem	11.7	+ 572	
35 Kaira	...	Nadiad	22.7	— 700	76 South Arcot	Cuddalore	11.7	+ 956	
36 Khandesh	...	Dhulia	21.0	— 240	77 South Canara	Mangalore	12.8	— 224	
					78 Tanjore	Kumbakonam	11.0	+ 860	
						Negapatam	10.7	+ 976	

TABLE XIII—A.

Latitudes and Longitudes of Chief places in British India and the Feudatory States.

(Longitudes are expressed by the difference in Seconds of time as compared with Ujjain.)

Serial No.	District.	Town.	Latitude in degrees & decimals of a degree.	Time difference in Seconds.	Serial No.	District.	Town.	Latitude in degrees & decimals of a degree.	Time difference in Seconds.
Madras Province—(continued).					Bombay Native States—(continued).				
78	Tanjore—contd ...	Tanjore.	10·7	+ 804	112	Kathiawar—contd.	Junagarh	21·5	—1244
		Mannargudi	10·7	+ 880			Navanagar	22·4	—1324
		Mayavaram	11·1	+ 928			Porabandar	21·6	—1436
79	Tinnevelly ...	Palamecttah	8·7	+ 472			Rajkot	22·3	—1188
		Rajapalaiyam	9·5	+ 424			Wadhwan	22·6	— 972
		Srivilliputtur	9·5	+ 440	113	Kolhapur ...	Kolhapur	16·6	— 364
		Tinnevelly	8·7	+ 456	Central India Agency.				
		Tiruchendur	8·5	+ 560	114	Rewah ...	Rewah	24·5	+1324
		Tuticorin	8·8	+ 568	115	Bhopal ...	Bhopal	23·2	+ 392
80	Trichinopoly ...	Trichinopoly	10·8	+ 700	116	Datia ...	Datia	25·6	+ 644
		Srirangam			117	Gwalior ...	Lashkar	26·2	+ 572
81	Vizagapatam.	Vizagapatam	17·7	+1804			Ujjain	23·1	+ 0
		Vizianagaram	18·2	+1832	118	Indore ...	Indore	22·7	+ 28
North West Frontier Province.					119	laora ...	laora	23·6	— 156
82	Dera Ismail Khan	Dera Ismail Khan	31·8	—1168	120	Mandasar in Gwalior	Mandasar	24·1	— 168
83	Kohat ...	Kohat	33·6	—1044	121	Ratlam ...	Ratlam	23·3	— 176
84	Peshawar ...	Peshawar	34·0	—1008	Hyderabad State.				
Punjab Province.					122	Aurangabad ...	Aurangabad	19·8	— 108
85	Amritsar ...	Amritsar	31·7	— 216			Jalna		
86	Delhi ...	Delhi	28·7	+ 352	123	Gulbarga ...	Gulbarga	17·3	+ 256
87	Dera Ghazi Khan	Dera Ghazi Khan	30·0	—1200	124	Hyderabad ...	Hyderabad	17·3	+ 640
88	Ferozepore ...	Ferozepore	31·0	— 280	125	Raichur ...	Raichur	16·2	+ 376
89	Gurdaspur ...	Batala	30·6	— 140	Kashmir State.				
90	Gujranwala ...	Gujranwala	32·2	— 384	126	Jammu ...	Jammu	32·7	— 208
91	Gurgaon ...	Rewari	28·2	+ 204	127	Kashmir ...	Srinagar	34·8	— 228
92	Hissar ...	Bhiwani	28·8	+ 84	Madras Native States.				
93	Jhang ...	Jhang-Maghiana	31·3	— 828	128	Cochin ...	Ernakulam	10·0	+ 120
94	Karnal ...	Karnal	29·7	+ 288			Mattancheri	10·0	+ 112
		Panipat	29·4		129	Pudukkottai ...	Pudukkottai	10·3	+ 728
95	Jullundur ...	Jullundur	31·3	— 48	130	Travancore ...	Alleppey	9·5	+ 132
96	Lahore ...	Lahore	31·6	— 348			Nagercoil	8·1	+ 400
		Kasur	31·1	— 316			Trivandrum	8·5	+ 280
97	Ludhiana ...	Ludhiana	31·0	+ 20	Mysore State.				
98	Multan ...	Multan	30·2	—1024	131	Bangalore ...	Bangalore	13·0	+ 432
99	Rawalpandi ...	Rawalpandi	33·6	— 640	132	Kolar ...	Kolar	13·1	+ 564
100	Rohtak ...	Rohtak	28·9	+ 192	133	Mysore ...	Mysore	12·3	+ 212
101	Sialkot ...	Sialkot	32·5	— 300	Punjab Native States.				
Sindh Province.					134	Malar Kotla ...	Malar Kotla	30·5	+ 48
102	Hyderabad ...	Hyderabad	25·3	—1768	135	Patiala ...	Patiala	30·3	+ 164
103	Karachi ...	Karachi	24·8	—2092	Rajputana Agency.				
104	Sukkur ...	Shikarpur	28·0	—1708	136	Alwar ...	Alwar	27·6	+ 196
		Sukkur	27·7	—1652	137	Bharatpur ...	Bharatpur	27·2	+ 412
United Provinces of Agra and Oudh.					138	Bikaner ...	Bikaner	28·0	— 596
105	Harodi ...	Shahabad	27·7	+1000	139	Jaipur ...	Sikar	27·6	— 156
106	Sitapur ...	Sitapur	27·6	+1172			Jaipur	26·9	+ 12
NATIVE STATES.					140	Karauli ...	Karauli	26·5	+ 300
Baroda State.					141	Kotah ...	Kotah	25·1	+ 16
107	Baroda ...	Baroda	22·3	— 608	142	Jodhpur ...	Jodhpur	26·3	— 664
108	Kadi ...	Patan	23·8	— 868	143	Mewar or Udaipur	Udaipur	24·6	— 500
		(Anhilwad)			144	Tonk ...	Tonk	26·1	+ 4
109	Navasan ...	Navasan	21·0	— 684	United Provinces Native States.				
Bombay Native States.					145	Rampur ..	Rampur	28·8	+ 780
110	Cambay ...	Cambay	22·3	— 748					
111	Cutch ...	Bhuj	23·2	—1436					
112	Kathiawar ...	Bhaunagar	21·7	— 860					
		Dhoraji	21·7	—1240					

TABLE XIV.

Jupiter's Cycle of 60 years—Northern System, showing suppressed years. A.D. 280 to A.D. 2000.

0	Vijaya	...	2 80	3 39	3 98	4 58	5 17	5 76	6 36	0	6 95	7 54	8 14	8 73	9 32	9 92	10 51	11 10
1	Jaya	...	81	40	99	59	18	77	37	1	96	55	15	74	33	93	52	11
2	Manmatha	...	82	41	4 00	60	19	78	38	2	97	56	16	75	34	94	53	12
3	Durmukha	...	83	42	01	61	20	79	39	3	98	57	17	76	35	...	54	13
4	Hemalamba	...	84	43	02	62	21	80	40	4	99	58	18	77	36	95	55	14
5	Vilamba	...	85	44	03	63	22	81	41	5	7 00	59	19	78	37	96	56	15
6	Vikarin	...	86	45	04	64	23	82	42	6	01	60	20	79	38	97	57	16
7	Sarvari	...	87	46	05	65	24	83	43	7	02	61	21	80	39	98	58	17
8	Plava	...	88	47	06	66	25	84	44	8	03	62	22	81	40	99	59	18
9	Subhakrit	...	89	48	07	67	26	85	45	9	04	63	23	82	41	10 00	60	19
10	Sobhana	...	90	49	08	68	27	86	46	10	05	64	...	83	42	01	61	20
11	Krodhin	...	91	50	09	69	28	87	47	11	06	65	24	84	43	02	62	21
12	Visvvasu	...	92	51	10	70	29	88	48	12	07	66	25	85	44	03	63	22
13	Parabhava	...	93	52	11	71	30	89	49	13	08	67	26	86	45	04	64	23
14	Plavanga	...	94	53	12	72	31	90	50	14	09	68	27	87	46	05	65	24
15	Kilaka	...	95	54	13	73	32	91	51	15	10	69	28	88	47	06	66	25
16	Saumya	...	96	55	14	74	33	92	52	16	11	70	29	89	48	07	67	26
17	Sadharana	...	97	56	15	75	34	93	53	17	12	71	30	90	49	08	68	27
18	Virodhakrit	...	98	57	16	76	35	94	...	18	13	72	31	91	50	09	69	28
19	Paridhavin	...	99	58	17	77	36	95	54	19	14	73	32	92	51	10	70	29
20	Pramadin	...	3 00	59	18	78	37	96	55	20	15	74	33	93	52	11	71	30
21	Ananda	...	01	60	19	79	38	97	56	21	16	75	34	94	53	12	72	31
22	Rakshasa	...	02	61	20	80	39	98	57	22	17	76	35	95	54	13	73	32
23	Anala	...	03	62	21	81	40	99	58	23	18	77	36	96	55	14	74	33
24	Pingala	...	04	63	22	82	41	6 00	59	24	19	78	37	97	56	15	75	34
25	Kalayukta	...	05	64	23	...	42	01	60	25	20	79	38	98	57	16	76	35
26	Siddhachin	...	06	65	24	83	43	02	61	26	21	80	39	99	58	17	77	36
27	Raudra	...	07	66	25	84	44	03	62	27	22	81	40	9 00	59	18	78	37
28	Durmati	...	08	67	26	85	45	04	63	28	23	82	41	01	60	19	79	38
29	Dundubhi	...	09	68	27	86	46	05	64	29	24	83	42	02	61	20	...	39
30	Rudhirodgarin	...	10	69	28	87	47	06	65	30	25	84	43	03	62	21	80	40
31	Raktaksha	...	11	70	29	88	48	07	66	31	26	85	44	04	63	22	81	41
32	Krodhana	...	...	71	30	89	49	08	67	32	27	86	45	05	64	23	82	42
33	Kshaya	...	12	72	31	90	50	09	68	33	28	87	46	06	65	24	83	43
34	Prabhava	...	13	73	32	91	51	10	69	34	29	88	47	07	66	25	84	44
35	Vibhava	...	14	74	33	92	52	11	70	35	30	89	48	08	67	26	85	45
36	Sukla	...	15	75	34	93	53	12	71	36	31	90	49	...	68	27	86	46
37	Pramoda	...	16	76	35	94	54	13	72	37	32	91	50	09	69	28	87	47
38	Prajapati	...	17	77	36	95	55	14	73	38	33	92	51	10	70	29	88	48
39	Angiras	...	18	78	37	96	56	15	74	39	34	93	52	11	71	30	89	49
40	Srimukha	...	19	79	38	97	57	16	75	40	35	94	53	12	72	31	90	50
41	Bhava	...	20	80	39	98	58	17	76	41	36	95	54	13	73	32	91	51
42	Yuvan	...	21	81	40	99	59	18	77	42	37	96	55	14	74	33	92	52
43	Dhatri	...	22	82	41	5 00	60	19	78	43	38	97	56	15	75	34	93	53
44	Isvara	...	23	83	42	01	61	20	79	44	...	98	57	16	76	35	94	54
45	Bahudhanya	...	24	84	43	02	62	21	80	45	39	99	58	17	77	36	95	55
46	Pramathin	...	25	85	44	03	63	22	81	46	40	8 00	59	18	78	37	96	56
47	Vikrama	...	26	86	45	04	64	23	82	47	41	01	60	19	79	38	97	57
48	Vrisha	...	27	87	46	05	65	24	83	48	42	02	61	20	80	39	98	58
49	Chitrabhanu	...	28	88	47	06	66	25	84	49	43	03	62	21	81	40	99	59
50	Subhanu	...	29	89	48	07	67	26	85	50	44	04	63	22	82	41	11 00	60
51	Tarana	...	30	90	49	08	...	27	86	51	45	05	64	23	83	42	01	61
52	Parthiva	...	31	91	50	09	68	28	87	52	46	06	65	24	84	43	02	62
53	Vyaya	...	32	92	51	10	69	29	88	53	47	07	66	25	85	44	03	63
54	Sarvajit	...	33	93	52	11	70	30	89	54	48	08	67	26	86	45	04	64
55	Sarvadhari	...	34	94	53	12	71	31	90	55	49	09	68	27	87	46	05	...
56	Virodhin	...	35	95	54	13	72	32	91	56	50	10	69	28	88	47	06	65
57	Vikrita	...	36	96	55	14	73	33	92	57	51	11	70	29	89	48	07	66
58	Khara	...	37	97	56	15	74	34	93	58	52	12	71	30	90	49	08	67
59	Nandana	...	38	...	57	16	75	35	94	59	53	13	72	31	91	50	09	68

TABLE XIV.

Jupiter's Cycle of 60 years—Northern System, showing suppressed years. A.D. 280 to A.D. 2000.

0	Vijaya	...	11	69	12	29	12	88	13	47	14	07	14	66	15	25	0	15	85	16	44	17	03	17	63	18	22	18	81	19	40	
1	Jaya	...		70		30		89		48		08		67		26	1		86		45		04		64		23		82		41	
2	Manmatha	...		71		31		90		49		09		68		27	2		87		46		05		65		24		83		42	
3	Durmukha	...		72		32		91		50		10		69		28	3		88		47		06		66		25		84		43	
4	Hemalamba	...		73		33		92		51		11		70		29	4		89		48		07		67		26		85		44	
5	Vilamba	...		74		34		93		52		12		71		30	5		90		49		08		68		27		86		45	
6	Vikarin	...		75		35		94		53		13		72		31	6		91		50		09		69		28		87		46	
7	Sarvari	...		76		36		95		54		14		73		32	7		92		51		10		70		29		88		47	
8	Plava	...		77		37		96		55		15		74		33	8		93		52		11		71		30		89		48	
9	Subhakrit	...		78		38		97		56		16		75		34	9		94		53		12	72		31		90		49
10	Sobhana	...		79		39		98		57		17		76		35	10		95		54		13		72		32		91		50	
11	Krodhin	...		80		40		99		58		18		77		36	11		96		55		14		73		33		92		51	
12	Visvavasu	...		81		41	13	00		59		19		78		37	12		97		56		15		74		34		93		52	
13	Parabhava	...		82		42		01		60		20		79		38	13		98		57		16		75		35		94		53	
14	Plavanga	...		83		43		02		61		...		80		39	14		99		58		17		76		36		95		54	
15	Kilaka	...		84		44		03		62		21		81		40	15	16	00		59		18		77		37		96		55	
16	Saumya	...		85		45		04		63		22		82		41	16	...		60		19		78		38		97		56		
17	Sadharana	...		86		46		05		64		23		83		42	17	01		61		20		79		39		98		57		
18	Virodhakrit	...		87		47		06		65		24		84		43	18	02		62		21		80		40		99		58		
19	Paridhavin	...		88		48		07		66		25		85		44	19	03		63		22		81		41	19	00		59		
20	Pramadin	...		89		49		08		67		26		86		45	20	04		64		23		82		42		01		60		
21	Ananda	...		90		50		09		68		27		87		46	21	05		65		24		83		43		02		61		
22	Rakshasa	...		91		...		10		69		28		88		47	22	06		66		25		84		44		03		62		
23	Anala	...		92		51		11		70		29		89		48	23	07		67		26		85		45		04		63		
24	Pingala	...		93		52		12		71		30		90		49	24	08		68		27		86		46		05		64		
25	Kalayukta	...		94		53		13		72		31		91		50	25	09		69		28		87		47		06		65		
26	Siddharthin	...		95		54		14		73		32		92		51	26	10		70		29		88		48		07		66		
27	Raudra	...		96		55		15		74		33		93		52	27	11		71		30		89		49		08		67		
28	Durmati	...		97		56		16		75		34		94		53	28	12		72		31		90		50		09		68		
29	Dundubhi	...		98		57		17		76		35		95		54	29	13		73		32		91		51		10		69		
30	Rudhirodgarin	...		99		58		18		77		36		96		55	30	14		74		33		92		52		11		70		
31	Raktaksha	...	12	00		59		19		78		37		97		56	31	15		75		34		93		53		12		71		
32	Krodhana	...		01		60		20		79		38		98		57	32	16		76		35		94		54		13		72		
33	Kshaya	...		02		61		21		80		39		99		58	33	17		77		36		95		55		14		73		
34	Prabhava	...		03		62		22		81		40	15	00		59	34	18		78		37		96		56		15		74		
35	Vibhava	...		04		63		23		82		41		01		60	35	19		79		38		97		...		16		75		
36	Sukla	...		05		64		24		83		42		02		61	36	20		80		39		98		57		17		76		
37	Pramoda	...		06		65		25		84		43		03		62	37	21		81		40		99		58		18		77		
38	Prajapati	...		07		66		26		85		44		04		63	38	22		82		41	18	00		59		19		78		
39	Angiras	...		08		67		27		86		45		05		64	39	23		83		42		01		60		20		79		
40	Srimukha	...		09		68		28		87		46		06		65	40	24		84		43		02		61		21		80		
41	Bhava	...		10		69		29		88		47		07		66	41	25		85		44		03		62		22		81		
42	Yuvan	...		11		70		30		89		48		08		67	42	26		...		45		04		63		23		82		
43	Dhatri	...		12		71		31		90		49		09		68	43	27		86		46		05		64		24		83		
44	Isvara	...		13		72		32		91		50		10		69	44	28		87		47		06		65		25		84		
45	Baludhanya	...		14		73		33		92		51		11		70	45	29		88		48		07		66		26		85		
46	Pramathin	...		15		74		34		93		52		12		71	46	30		89		49		08		67		27		86		
47	Vikrama	...		16		75		35		94		53		13		72	47	31		90		50		09		68		28		87		
48	Vrisha	...		17		76		...		95		54		14		73	48	32		91		51		10		69		29		88		
49	Chitrabhanu	...		18		77		36		96		55		...		74	49	33		92		52		11		70		30		89		
50	Subhanu	...		19		78		37		97		56		15		75	50	34		93		53		12		71		31		90		
51	Tarana	...		20		79		38		98		57		16		76	51	35		94		54										

Correspondence of Hijra (Muhammadan) and A.D. Years, A.D. 1323 to A.D. 1681.

	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.	H.	A.D.
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TABLE XV.—Explanation.

Correspondence of Hijra (Muhammadan) and A.D. Years, A.D. 622 to A.D. 2000.

1. This table shows the A.D. year and month when each Hijra year begins.

2. Hijra years are divided into cycles of 30 each. From 622 A.D. to 2000 A.D. there are 48 such cycles, the first cycle being an incomplete one of 29 years. The cycles are indicated by the figures between brackets.

3. The actual date of the A.D. month marking the commencement of each Hijra year can be obtained from Table X by adding 1, 2 or 3 days, according to the following rules, to the date of mean new-moon shown in that table.

(a) Subject to the exceptions noted in Rule (c) below, 2 days are to be added to the date of mean new-moon when the fraction of day shown in Table X against the mean new-moon does not exceed the decimal figure printed in *italic* under each cycle in this table. When this figure is exceeded, add 3 days.

(b) The figure printed in *italic* may be called the 'argument of the crescent' and the quantity to be added to the date of mean new-moon, whether 1, 2 or 3 days, may be called the 'equation of the crescent'. In cycles (1) to (41), the highest argument for an equation of 2 days is shown against the year in which that argument occurs. For instance, in the 30th cycle, the maximum argument for an equation of 2 days is *.86* which is entered against A.D. 1484, H. 889. This entry means that in the 30th cycle, whenever the fraction of day set against a new moon in Table X, is *.86* (as in January 1484 A.D.) or less, 2 days are to be added to the date of mean new moon in order to get the commencement of the corresponding Hijra year. Otherwise, that is, if the fraction of day exceeds *.86*, 3 days should be added. Thus, taking 10 successive years of the 30th cycle, the dates of commencement of the corresponding Hijra years are ascertained as follows from this Table and Table X :—

A.D. year.	Month.	Day and fraction of day.	Hijra year.	Commencement of Hijra year.	A.D. year.	Month.	Day and fraction of day.	Hijra year.	Commencement of Hijra year.
1480	March	11·39	885	13th March	1485	January	16·23	890	18th January
1481	February	28·76	886	2nd March	1486	January	5·60	891	7th January
1482	February	18·13	887	20th February	1486	December	25·96	892	28th December
1483	February	7·50	888	9th February	1487	December	15·33	893	17th December
1484	January	27·86	889	29th January	1488	December	3·70	894	5th December

(c) From the 42nd to the 48th cycles (A.D. 1815—2000), the additions to be made to mean new moon dates in order to get the commencement of Hijra years are 1 day and 2 days respectively, according as the limit shown in this table is not, or is, exceeded. Thus in the 42nd cycle, 1 day has to be added only when the fraction of day of mean new moon is *.00*, i.e., in the year 1833, when new moon fell on May 19·00. The corresponding Hijra year 1249, therefore, commenced on 20th May 1833. In all other years of this cycle the number of days to be added to mean new moon in order to get the commencement of Hijra year is 2. Similarly in 1862, mean new-moon fell on June 27·01 and the Hijra year 1279 commenced on 28th June. In A.D. 1978, the Hijra year will commence on Dec. 1, because new-moon will fall on Nov. 30·06, and *.06*, is the argument of the crescent for that cycle.

4. The 2nd, 5th, 8th, 10th, 13th, 15th, 19th, 21st, 24th, 27th and 29th years in each cycle are leap years according to the present table, that is, they will be found to contain 355 days instead of 354. In certain countries, however, the 7th, 18th and 26th years of each cycle are reckoned as leap years instead of the 8th, 19th and 27th. Under the former reckoning, the 8th, 19th and 27th years following as they do, certain leap years, would begin 1 day later than they do according to the present table. For the convenience of reference, the 8th, 19th and 27th years of each cycle are marked by an asterisk. The reader will understand that the date of commencement of such Hijra years, as determined by the rules above laid down, is liable to be increased by 1 day in those countries where the 7th, 18th and 26th years of each cycle are regarded as leap years.

TABLE XVI.

Modern Equations for Lunar Inequalities.

A.—Equation for Lunar Variation.

2 × (('s—⊙ 's Long.)								2 × (('s—⊙ 's Long.)							
Tithis				Eqn.				Tithis.				Eqn.			
d.	g.	p.		d.	g.	p.	g. p.	d.	g.	p.		d.	g.	p.	g. p.
1	24°	1	50	13	29	23	30	—1	11	9	216°	16	31	58	+1 43
2	48°	3	40	26	31	13	43	—2	11	10	240°	18	22	11	+2 32
3	72°	5	30	39	33	3	56	—2	47	11	264°	20	12	24	+2 55
4	96°	7	20	52	34	54	9	—2	55	12	288°	22	2	37	+2 47
5	120°	9	11	6	36	44	23	—2	32	13	312°	23	52	50	+2 11
6	144°	11	1	19	38	34	36	—1	43	14	336°	25	43	3	+1 11
7	168°	12	51	32	40	24	49	—0	37	15	360°	27	33	17	+0 0
8	192°	14	41	45	42	15	2	+0	37						

B.—('s Anomaly in days, ghatikas and palas and corresponding Equation of the

Eqn.	Ogh.	1	2	3	4	5	6	7	8	9	Eqn.	10gh.	11	12	13	14	15	16	17	18	19
Palas.	0	Days of Anom.	0	1	1	1	0	1	1	1	Palas.	1	1	1	1	II	II	II	II	II	II
	g.p.	g.p.	g.p.	g.p.	g.p.	g.p.	g.p.	g.p.	g.p.	g.p.		g.p.	g.p.	g.p.	g.p.	g.p.	g.p.	g.p.	g.p.	g.p.	g.p.
0	0, 6	8,30	17, 0	25,34	34, 8	42,43	51,22	0,10	8,53	17,41	0	26,39	35,36	44,52	54,12	3,32	13,16	23, 8	33, 5	43,25	54, 1
1	0, 9	8,39	17,13	25,43	34,17	42,52	51,31	0,14	8,58	17,15	1	26,43	35,45	45, 1	54,17	3,46	13,25	23,13	33,14	43,34	54, 1
2	0,14	8,48	17,18	25,52	34,27	43, 1	51,40	0,23	9, 7	17,55	2	26,52	35,54	45, 5	54,26	3,55	13,34	23,26	33,28	43,43	54, 1
3	0,23	8,57	17,27	26, 1	34,31	43,10	51,45	0,33	9,16	18, 4	3	27, 1	36, 4	45,15	54,40	4, 4	13,43	23,36	33,37	43,52	54, 1
4	0,32	9, 6	17,36	26,11	34,41	43,19	51,54	0,42	9,25	18,14	4	27,15	36,13	45,28	54,49	4,13	13,52	23,45	33,46	44, 6	54, 1
5	0,41	9,11	17,46	26,20	34,50	43,29	52, 7	0,51	9,35	18,23	5	27,20	36,22	45,38	54,53	4,23	14, 1	23,54	33,55	44,15	54, 1
6	0,50	9,20	17,55	26,29	34,59	43,38	52,17	1, 0	9,44	18,32	6	27,29	36,31	45,47	55, 2	4,32	14,15	24, 3	34, 1	44,29	55, 1
7	1, 0	9,30	17,59	26,34	35, 8	43,47	52,21	1, 9	9,53	18,41	7	27,38	36,40	45,52	55,16	4,46	14,20	24,17	34,19	44,34	55, 1
8	1, 9	9,39	18, 8	26,43	35,17	43,52	52,30	1,19	9,58	18,50	8	27,48	36,49	46, 5	55,25	4,50	14,29	24,26	34,23	44,47	55, 1
9	1,18	9,48	18,18	26,52	35,26	44, 1	52,40	1,28	10, 7	18,59	9	28, 1	36,59	46,14	55,35	5, 0	14,43	24,35	34,37	44,57	55, 1
10	1,27	9,53	18,27	27, 1	35,31	44,10	52,49	1,37	10,16	19, 9	10	28, 6	37, 8	46,24	55,44	5,13	14,52	24,49	34,46	45,10	55, 1
11	1,32	10, 2	18,36	27,11	35,40	44,19	52,58	1,46	10,25	19,13	11	28,15	37,17	46,33	55,53	5,23	14,56	24,54	35, 0	45,15	56, 1
12	1,41	10,11	18,45	27,20	35,49	44,28	53, 7	1,55	10,34	19,23	12	28,24	37,26	46,42	56, 2	5,32	15,10	25, 3	35, 9	45,29	56, 1
13	1,50	10,20	18,50	27,29	35,59	44,33	53,17	2, 5	10,43	19,31	13	28,33	37,35	46,51	56,11	5,41	15,20	25,16	35,11	45,38	56, 1
14	2, 0	10,29	18,59	27,38	36, 8	44,42	53,25	2, 9	10,53	19,46	14	28,43	37,44	47, 0	56,20	5,50	15,29	25,21	35,27	45,52	56, 1
15	2, 9	10,38	19, 8	27,47	36,17	44,51	53,35	2,18	11, 2	19,54	15	28,52	37,54	47, 9	56,30	5,59	15,38	25,35	35,32	46, 1	56, 1
16	2,13	10,48	19,17	27,52	36,26	45, 0	53,39	2,28	11,11	19,59	16	29, 1	38, 3	47,19	56,39	6, 8	15,47	25,44	35,46	46,10	56, 1
17	2,22	10,57	19,26	28, 1	36,35	45,10	53,49	2,37	11,20	20, 8	17	29,10	38,12	47,28	56,48	6,18	15,56	25,53	35,50	46,20	57, 1
18	2,32	11, 6	19,36	28,10	36,44	45,19	53,58	2,46	11,29	20,18	18	29,19	38,21	47,37	56,57	6,27	16, 6	26, 7	36, 4	46,33	57, 1
19	2,41	11,10	19,45	28,19	36,49	45,28	54, 7	2,55	11,38	20,27	19	29,29	38,30	47,46	57, 7	6,36	16,19	26,11	36,13	46,42	57, 1
20	2,50	11,20	19,54	28,24	36,58	45,37	54,16	3, 4	11,48	20,36	20	29,38	38,39	47,55	57,16	6,50	16,24	26,26	36,27	46,52	57, 1
21	2,59	11,29	20, 3	28,33	37, 7	45,46	54,25	3,13	11,57	20,45	21	29,47	38,49	48, 5	57,25	6,59	16,38	26,35	36,36	47, 1	57, 1
22	3, 8	11,38	20, 8	28,42	37,17	45,51	54,35	3,23	12, 1	20,54	22	29,56	38,58	48,14	57,34	7, 8	16,47	26,44	36,45	47,15	58, 1
23	3,17	11,43	20,17	28,51	37,26	46, 0	54,44	3,27	12,11	21, 4	23	30, 5	39, 7	48,23	57,43	7,17	16,56	26,53	36,54	47,24	58, 1
24	3,27	11,52	20,26	29, 1	37,35	46, 9	54,53	3,36	12,20	21,13	24	30,14	39,16	48,32	57,52	7,26	17, 5	27, 2	37, 8	47,37	58, 1
25	3,31	12, 1	20,36	29,10	37,44	46,19	55, 2	3,45	12,29	21,17	25	30,24	39,26	48,41	58, 2	7,36	17,14	27,16	37,17	47,42	58, 1
26	3,40	12,10	20,45	29,19	37,53	46,28	55,11	3,59	12,38	21,26	26	30,33	39,30	48,50	58,11	7,45	17,23	27,25	37,27	47,56	58, 1
27	3,50	12,20	20,54	29,28	38, 2	46,37	55,20	4, 8	12,48	21,36	27	30,42	39,39	49, 0	58,25	7,54	17,33	27,34	37,36	48, 5	59, 1
28	3,59	12,29	21, 3	29,37	38, 7	46,46	55,30	4,13	12,57	21,49	28	30,47	39,53	49,14	58,29	8, 3	17,46	27,44	37,50	48,19	59, 1
29	4, 3	12,38	21,12	29,42	38,16	46,55	55,34	4,22	13, 6	21,54	29	30,56	40, 2	49,18	58,38	8,17	17,51	27,53	37,58	48,23	59, 1
30	4,13	12,47	21,21	29,51	38,26	47, 4	55,43	4,31	13,15	22, 3	30	31, 5	40,12	49,27	58,47	8,26	18, 5	28, 6	38,13	48,37	59, 1
31	4,22	12,56	21,26	30, 0	38,34	47, 9	55,52	4,41	13,20	22,12	31	31,14	40,16	49,36	59, 1	8,35	18,14	28,16	38,17	48,47	59, 1
32	4,31	13, 1	21,35	30, 9	38,39	47,18	56, 2	4,50	13,29	22,21	32	31,23	40,25	49,50	59, 6	8,45	18,23	28,25	38,31	49, 0	59, 1
33	4,40	13,10	21,44	30,19	38,49	47,27	56,11	4,59	13,43	22,31	33	31,33	40,39	49,59	59,15	8,54	18,37	28,34	38,40	49, 9	3 0, 1
34	4,49	13,19	21,53	30,23	38,58	47,37	56,20	5, 8	13,52	22,40	34	31,42	40,48	50, 4	59,29	9, 3	18,41	28,43	38,54	49,19	0, 1
35	4,59	13,28	21,58	30,32	39, 7	47,46	56,29	5,18	13,56	22,49	35	31,51	40,53	50,13	59,38	9,12	18,56	28,57	38,59	49,28	0, 2
36	5, 8	13,38	22, 7	30,41	39,16	47,55	56,38	5,27	14, 6	22,58	36	32, 0	41, 2	50,27	59,47	9,21	19, 4	29, 6	39,12	49,42	0, 3
37	5,17	13,42	22,16	30,51	39,25	48, 4	56,48	5,31	14,15	23, 8	37	32, 5	41,11	50,36	59,52	9,30	19,14	29,15	39,22	49,51	0, 4
38	5,22	13,51	22,26	31, 0	39,34	48,13	56,52	5,40	14,24	23,12	38	32,19	41,20	50,41	2 0, 5	9,44	19,23	29,24	39,35	50, 0	0, 5
39	5,31	14, 0	22,35	31, 9	39,44	48,22	57, 2	5,50	14,33	23,21	39	32,28	41,34	50,50	0,15	9,53	19,32	29,34	39,44	50, 9	1, 1
40	5,40	14,10	22,44	31,19	39,53	48,27	57,10	5,59	14,42	23,30	40	32,37	41,39	51, 4	0,24	9,58	19,46	29,47	39,54	50,23	1, 2
41	5,49	14,19	22,53	31,28	39,57	48,36	57,20	6, 8	14,51	23,39	41	32,41	41,48	51,13	0,33	10,12	19,55	29,52	40, 3	50,32	1, 2
42	5,58	14,28	23, 2	31,37	40, 7	48,45	57,33	6,17	15, 1	23,54	42	32,51	41,57	51,22	0,42	10,21	20, 4	30, 6	40,17	50,46	1, 4
43	6, 3	14,37	23,11	31,41	40,16	48,55	57,38	6,26	15,10	23,58	43	33, 4	42,11	51,31	0,52	10,30	20,13	30,15	40,26	50,50	1, 5
44	6,12	14,46	23,16	31,51	40,25	49, 4	57,47	6,35	15,14	24, 7	44	33,14	42,15	51,40	1, 0	13,39	20,23	30,24	40,35	51, 4	2, 0
45	6,21	14,56	23,26	32, 0	40,34	49,13	57,57	6,45	15,24	24,16	45	33,23	42,24	51,50	1,15	10,48	20,36	30,38	40,44	51,13	2, 1
46	6,30	15, 0	23,34	32, 9	40,43	49,22	58, 6	6,49	15,38	24,26	46	33,27	42,34	51,59	1,19	10,58	20,46	30,43	40,58	51,27	2, 2
47	6,40	15, 9	23,44	32,18	40,52	49,32	58,15	6,58	15,46	24,35	47	33,36	42,43	52, 8	1,28	11,11	20,55	30,56	41, 7	51,36	2, 3
48	6,49	15,18	23,53	32,27	41, 2	49,41	58,24	7,12	15,56	24,44	48	33,46	42,52	52,17	1,38	11,21	21, 4	31, 6	41,21	51,50	2, 5
49	6,58	15,28	24, 2	32,36	41,11	49,45	58,33	7,21	16, 0	24,53	49	33,59	43, 2	52,26	1,51	11,25	21,13	31,15	41,25	51,59	3, 1
50	7, 7	15,32	24,11	32,46	41,15	49,54	58,43	7,26	16, 9	25, 2	50	34, 4	43,11	52,35	1,56	11,39	21,27	31,24	41,39	52,13	3, 1
51	7,16	15,41	24,21	32,55	41,24	50, 4	58,52	7,35	16,19	25,11	51	34,13	43,20	52,45	2,10	11,48	21,36	31,33	41,49	52,22	3, 1
52	7,21	15,51	24,30	32,59	41,34	50,13	58,56	7,44	16,28	25,16	52	34,22	43,34	52,54	2,19	11,57	21,45	31,47	42, 2	52,32	3, 3
53	7,30	16, 0	24,34	33, 9	41,43	50,22	59, 5	7,53	16,37	25,25	53	34,32	43,43	53, 3	2,28	12, 7	21,54	31,56	42, 7	52,45	3, 4
54	7,39	16, 9	24,43	33,18	41,52	50,31	59,15	8, 3	16,46	25,34	54	34,46									

Lunar Inequalities.

Centre in ghatikas and palas.

gh.	21	22	23	24	Eqn.	25	26	27	28	29	30
I	III	III	III	III		IV	IV	IV	IV	V	V
p.	g.p.	g.p.	g.p.	g.p.	Palas.	g.p.	g.p.	g.p.	g.p.	g.p.	g.p.
0	16,24	28,11	40,32	53,45	0	7,45	22,41	39,13	57,45	19,38	48,39
14	16,33	28,21	40,49	53,59	1	7,55	23, 0	39,32	57,58	20, 1	49,20
23	16,47	28,34	41, 3	54, 8	2	8, 9	23,18	39,45	58,21	20,29	49,48
37	16,56	28,48	41,17	54,22	3	8,27	23,32	40, 4	58,44	20,51	50,29
46	17,10	29, 1	41,26	54,36	4	8,41	23,46	40,23	59, 3	21,14	51,10
54	17,24	29,11	41,40	54,54	5	8,50	24, 4	40,45	59,21	21,38	51,47
9	17,33	29,25	41,49	55, 8	6	9, 8	24,18	41, 4	59,44	22, 5	52,28
18	17,42	29,39	42, 3	55,17	7	9,22	24,36	41,17	5 0, 3	22,28	52,56
27	17,56	29,52	42,12	55,31	8	9,40	24,50	41,36	0,25	22,51	53,37
41	18,10	30, 2	42,26	55,45	9	9,54	25, 4	41,59	0,48	23,19	54,18
50	18,19	30,11	42,40	55,58	10	10, 8	25,22	42,17	1, 2	23,41	55, 0
4	18,28	30,25	42,54	56,12	11	10,22	25,40	42,31	1,25	24, 9	55,23
13	18,41	30,39	43, 7	56,26	12	10,36	25,59	42,49	1,48	24,37	56, 4
22	18,56	30,52	43,16	56,40	13	10,54	26, 8	43, 7	2,11	24,55	56,45
36	19,10	31, 2	43,30	56,54	14	11, 3	26,26	43,26	2,25	25,13	57,27
45	19,19	31,15	43,44	57, 8	15	11,22	26,45	43,44	2,48	25,45	58, 8
59	19,28	31,29	43,53	57,17	16	11,35	27, 3	43,58	3,11	26,13	58,36
3, 8	19,42	31,43	44, 7	57,30	17	11,49	27,12	44,17	3,34	26,41	59,17
3,22	19,56	31,56	44,20	57,44	18	12, 8	27,31	44,35	3,52	27,13	59,54
3,36	20, 5	32, 7	44,34	57,55	19	12,17	27,49	44,58	4,10	27,40	6 0,35
3,45	20,14	32,19	44,48	58, 4	20	12,35	28, 7	45,12	4,33	28,12	1, 3
8,59	20,28	32,33	45, 2	58,25	21	12,49	28,21	45,30	4,52	28,35	1,39
9, 8	20,41	32,47	45,16	58,39	22	13, 3	28,35	45,48	5,15	29, 7	2,39
9,17	20,51	32,56	45,29	58,53	23	13,16	28,53	46, 7	5,28	29,40	3,34
9,26	21, 0	33,10	45,44	59, 7	24	13,30	29, 7	46,30	5,51	30,12	4,29
9,40	21,14	33,19	45,57	59,16	25	13,48	29,25	46,39	6,14	30,44	5,11
9,45	21,28	33,33	46, 6	59,34	26	14, 2	29,39	47, 2	6,37	31, 7	6, 6
9,58	21,36	33,47	46,20	59,48	27	14,16	29,57	47,20	7, 0	31,34	7, 1
0,12	21,46	33,56	46,34	0, 2	28	14,30	30,11	47,38	7,14	32, 7	7,56
0,26	21,59	34,10	46,52	0,11	29	14,43	30,30	47,52	7,37	32,39	8,37
0,35	22,13	34,24	47, 6	0,25	30	15, 1	30,48	48,10	8, 0	33,11	9,32
0,44	22,27	34,37	47,15	0,39	31	15,16	30,57	48,29	8,23	33,29	10,32
0,58	22,36	34,47	47,29	0,57	32	15,25	31,16	48,52	8,42	34, 2	11,27
1,12	22,46	35, 0	47,42	1, 6	33	15,43	31,34	49,10	9, 9	34,34	12,27
1,21	22,59	35,14	47,56	1,20	34	15,57	31,53	49,24	9,32	35, 6	13, 8
1,30	23,13	35,28	48, 6	1,34	35	16,16	32, 2	49,42	9,59	35,20	14, 4
1,44	23,22	35,42	48,24	1,52	36	16,29	32,20	50, 1	10,18	35,56	14,59
1,58	23,31	35,51	48,37	2, 6	37	16,38	32,38	50,19	10,32	36,20	15,54
2, 7	23,45	36, 0	48,51	2,20	38	16,57	32,57	50,33	10,55	37, 1	16,35
2,21	23,59	36,14	49, 5	2,33	39	17,11	33,15	50,51	11,18	37,33	17,30
2,30	24, 8	36,27	49,15	2,52	40	17,29	33,24	51,14	11,36	37,56	18,21
2,44	24,22	36,37	49,28	3, 6	41	17,38	33,43	51,33	11,59	38,28	18,53
2,53	24,31	36,50	49,42	3,20	42	17,52	34, 1	51,51	12,22	39, 0	21, 1
3, 7	24,45	37, 4	50, 0	3,33	43	18,10	34,15	52, 9	12,49	39,32	22, 6
3,16	24,54	37,17	50,10	3,47	44	18,20	34,29	52,23	13,12	39,50	23,37
3,30	25, 8	37,32	50,23	4, 6	45	18,42	34,47	52,46	13,40	40,23	25, 9
3,39	25,17	37,41	50,37	4,19	46	18,56	35, 1	53, 9	13,58	40,55	26,46
3,53	25,30	37,55	50,51	4,28	47	19,10	35,19	53,23	14,21	41,27	27,50
4, 6	25,40	38, 9	51, 5	4,47	48	19,28	35,33	53,41	14,49	41,59	29,27
4,16	25,54	38,22	51,14	5, 0	49	19,47	35,51	54, 4	15,16	42,17	31, 7
4,29	26, 8	38,32	51,32	5,19	50	20, 1	36, 9	54,27	15,35	42,50	32,53
4,38	26,17	38,45	51,46	5,29	51	20,19	36,28	54,45	15,58	43,22	34,25
4,53	26,26	38,54	52, 0	5,42	52	20,33	36,51	54,59	16,25	43,54	35,11
5, 8	26,40	39, 8	52, 9	6, 0	53	20,51	37, 5	55,18	16,53	44,26	36, 6
5,15	26,53	39,22	52,23	6,13	54	21, 9	37,23	55,36	17,20	44,49	40,32
5,29	27, 7	39,31	52,36	6,25	55	21,19	37,42	55,59	17,39	45,30	45, 0
5,38	27,16	39,45	52,51	6,41	56	21,37	38, 0	56,13	18, 2	46,12	50, 0
5,52	27,30	39,59	53, 9	6,55	57	21,55	38,19	56,36	18,24	46,53	53,19
6, 1	27,44	40,12	53,18	7,15	58	22,14	38,32	56,59	18,52	47,20	...
6,11	27,58	40,22	53,32	7,28	59	22,23	38,55	57,22	19,11	47,57	..

C.—Eqn., for evection in gh., and palas.

Argument: $2 \times ((\odot \text{'s Longitude}) - (\odot \text{'s Anomaly}))$

Eqn.	Ogh.	1	2	3	4	5	6
Palas.	0	Days	I	II	II	III	V
	g.p.	g.p.	g.p.	g.p.	g.p.	g.p.	g.p.
0	0, 0	40,11	20,59	4, 9	51,23	46, 2	5 0,21
1	0,41	40,39	21,45	5, 0	52,13	47,11	2, 6
2	1, 9	41,24	22,31	5,36	52,59	48,15	3,15
3	1,55	42, 6	23,17	6,22	53,50	49,19	4,56
4	2,36	42,52	23,44	7, 8	54,45	50, 5	6,42
5	3,17	43,19	24,30	7,59	55,26	51,14	8,23
6	4, 4	44, 5	25,16	8,49	55,59	52,23	9,59
7	4,31	44,47	26, 7	9,21	57,12	53,27	11,31
8	5,17	45,32	26,24	10, 7	58, 7	54,13	13,40
9	5,58	46,14	27,16	10,58	59, 6	55,22	15,49
10	6,40	46,42	27,42	11,48	59,43	56,31	17,53
11	7, 7	47,27	28,47	12,25	3 0,39	57,39	19,14
12	7,53	48, 9	29,33	13,11	1,34	58,49	21,14
13	8,39	48,54	30, 1	13,57	2,29	59,34	23,19
14	9,20	49,22	30,47	14,47	3, 9	4 1, 6	25,18
15	10, 2	50, 8	31,33	15,33	4, 1	1,57	27,13
16	10,29	50,50	32,19	16,10	4,56	3,10	28,49
17	11,15	51,40	32,51	16,56	5,51	3,56	31,16
18	11,56	52,17	33,37	17,47	6,51	5,15	33,43
19	12,42	52,44	34,23	18, 1	7,32	6,28	36,10
20	13, 5	53,30	35, 9	19,14	8,22	7,42	37,51
21	13,51	54,16	35,54	20, 0	9,27	8,55	40,18
22	14,37	55, 2	36,27	20,50	10,18	9,45	42,50
23	15,18	55,29	37,13	21,41	10,58	10,59	44,26
24	16, 4	56,15	37,59	22,31	11,53	12,12	50,14
25	16,27	56,57	38,44	23, 8	12,53	13,26	50,47
26	17,13	57,43	39,18	23,54	13,53	14,16	53,55
27	17,59	58,29	40, 2	24,44	14,52	15,30	57, 4
28	18,45	58,52	40,49	25,39	15,34	16,43	6 0,12
29	19,13	59,38	41,34	26,16	16,29	18,20	1,39
30	19,58	1 0,23	42,21	27, 2	17,29	19,15	7, 1
31	20, 4	1, 9	42,52	27,53	18,29	20,10	11,36
32	21,26	1,37	43,20	28,44	19,10	21,33	16,12
33	22, 8	2,23	44,24	29,34	20, 5	22,55	18,53
34	22,35	3, 4	45,10	30,10	21, 5	24,18	26,22
35	23,20	3,45	45,42	30,57	22, 4	25, 8	36, 6
36	24, 3	4,32	46,28	31,47	23, 4	26,31	53,19
37	24,43	4,59	47,14	32,37	23,42	27,54	...
38	25,11	5,45	48,41	33,14	24,41	29,16	...
39	25,57	6,31	48,50	34, 5	25,4C	30,39	...
40	26,43	7,13	49,23	35, 0	26,40	31,34	...
41	27,24	7,40	50, 9	35,46	27,26	31,57	..
42	28, 6	8,26	50,55	36,41	28,21	34,20	...
43	28,32	8,53	51,45	37,18	29,26	35,33	...
44	29,19	9,58	52,17	38, 8	30,30	36,33	...
45	30, 0	10,43	53, 3	39, 4	31,34	38, 5	...
46	30,46	11,12	53,49	39,53	32,15	39,36	...
47	31,14	11,57	54,36	40,35	33,15	41, 9	...
48	32, 0	12,43	55,26	41,21	34,19	42,40	...
49	32,41	13,29	55,58	42,16	35,23	43,40	...
50	33,22	13,57	56,44	43, 7	36, 9	45,12	...
51	34, 9	14,42	57,30	44, 1	37, 9	46,44	...
52	34,27	15,28	58,15	44,38	38, 9	48,52	...
53	35,17	16,14	58,48	45,30	39,13	49,15	...
54	36, 3	17, 0	59, 2	46,25	40,17	50,47	...
55	36,49	17,28	2 0,33	47,15	41, 3	52,46	...
56	37,12	18,14	1,14	47,56	42, 3	53,55	...
57	37,59	18,59	2, 1	48,46	43, 3	55,41	...
58	38,44	19,46	2,37	49,37	43,53	56,59	...
59	39,30	20,13	3,23	50,32	44,58	58,35	...

TABLE XVII.—MARS.

Data for calculating Latitude and geocentric Longitude of Mars from B.C. 1 to A.D. 2000.
Mars' mean motion for Centuries.

A.D.	Kaliyuga.	Mean long. at commence- ment of Solar Year.	Longi- tude of apsis.	Longi- tude of node.	A.D.	Kaliyuga.	Mean long. at commence- ment of Solar Year.	Longi- tude of apsis.	Longi- tude of node.
		Deg.	Deg.	Deg.			Deg.	Deg.	Deg.
1 B.C.	3101 K.Y.	254.7442	130.0274	40.0866	1000 A.D.	4101 K.Y.	140.0144	130.0444	40.0
100 A.D.	3201	315.2712	130.0291	40.0848	1100	4201	200.5414	130.0461	40.0
200	3301	15.7982	130.0308	40.0830	1200	4301	261.0684	130.0478	40.0
300	3401	76.3252	130.0325	40.0813	1300	4401	321.5954	130.0495	40.0
400	3501	136.8522	130.0342	40.0795	1400	4501	22.1224	130.0512	40.0
500	3601	197.3793	130.0359	40.0777	1500	4601	82.6495	130.0529	40.0
600	3701	257.9063	130.0376	40.0759	1600	4701	143.1765	130.0546	40.0
700	3801	318.4333	130.0393	40.0741	1700	4801	203.7035	130.0563	40.0
800	3901	18.9603	130.0410	40.0723	1800	4901	264.2305	130.0580	40.0
900	4001	79.4873	130.0427	40.0706	1900	5001	324.7575	130.0597	40.0
					2000	5101	25.2846	130.0614	40.0

Mars' mean motion for Odd Years.

Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.
1	191.40	11	305.46	21	59.51	31	173.56	41	287.62	51	41.67	61	155.72	71	269.77	81	23.83
2	22.81	12	136.86	22	250.92	32	4.97	42	119.02	52	233.07	62	347.13	72	101.18	82	215.23
3	214.22	13	328.27	23	82.32	33	196.37	43	310.43	53	64.48	63	178.53	73	292.58	83	46.64
4	45.62	14	159.67	24	273.73	34	27.37	44	141.83	54	255.88	64	9.94	74	123.99	84	238.04
5	237.03	15	351.08	25	105.13	35	219.81	45	333.24	55	87.29	65	201.34	75	315.39	85	69.45
6	68.43	16	182.48	26	296.54	36	50.59	46	164.64	56	278.69	66	32.75	76	146.80	86	260.85
7	257.84	17	13.89	27	127.94	37	241.99	47	356.05	57	110.10	67	224.15	77	338.21	87	92.26
8	91.24	18	205.29	28	319.35	38	73.40	48	187.45	58	301.51	68	55.56	78	169.61	88	283.66
9	282.65	19	36.70	29	150.75	39	264.80	49	18.86	59	132.91	69	246.96	79	1.02	89	115.07
10	114.05	20	228.10	30	342.16	40	96.21	50	210.26	60	324.32	70	78.37	80	192.42	90	306.47

Mars' Annual Eqn. in D.

Mars' mean motion for Days.														
Days.	0	1	2	3	4	5	6	7	8	9	0	+	+	-
		Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.				
0	...	0.52	1.05	1.57	2.10	2.62	3.14	3.67	4.19	4.72	1	2.5	179.5	180.5
1	5.24	5.76	6.29	6.81	7.33	7.86	8.38	8.91	9.43	9.96	2	5.1	178.9	181.1
2	10.48	11.00	11.52	12.05	12.58	13.10	13.62	14.15	14.67	15.19	3	7.6	178.4	181.6
3	15.72	16.24	16.77	17.29	17.82	18.34	18.86	19.39	19.91	20.44	4	10.1	177.8	182.2
4	20.96	21.48	22.01	22.53	23.06	23.58	24.11	24.63	25.15	25.68	5	12.7	177.3	182.7
5	26.20	26.73	27.25	27.77	28.30	28.82	29.35	29.87	30.39	30.92	6	15.2	176.8	183.2
6	31.44	31.97	32.49	33.01	33.54	34.07	34.59	35.11	35.63	36.16	7	17.8	176.2	183.8
7	36.68	37.21	37.73	38.25	38.78	39.30	39.83	40.35	40.87	41.40	8	20.4	175.7	184.3
8	41.92	42.45	42.97	43.49	44.02	44.54	45.07	45.59	46.11	46.64	9	23.0	175.1	184.9
9	47.16	47.69	48.21	48.73	49.26	49.78	50.31	50.83	51.35	51.88	10	25.5	174.5	185.5
10	52.40	52.93	53.45	53.97	54.50	55.02	55.55	56.07	56.59	57.12	11	28.1	173.9	186.1
11	57.64	58.17	58.70	59.22	59.74	60.26	60.79	61.31	61.84	62.36	12	30.7	173.4	186.6
12	62.88	63.41	63.93	64.46	64.98	65.50	66.03	66.55	67.08	67.60	13	33.3	172.8	187.2
13	68.12	68.65	69.17	69.70	70.22	70.74	71.27	71.79	72.32	72.84	14	35.9	172.2	187.8
14	73.36	73.89	74.41	74.94	75.46	75.98	76.51	77.03	77.56	78.08	15	38.5	171.5	188.5
15	78.60	79.13	79.65	80.18	80.70	81.22	81.75	82.27	82.80	83.32	16	41.2	170.9	189.1
16	83.84	84.37	84.89	85.42	85.94	86.46	86.99	87.51	88.04	88.56	17	43.9	170.3	189.7
17	89.09	89.61	90.13	90.66	91.18	91.71	92.23	92.75	93.28	93.80	18	46.5	169.6	190.4
18	94.33	94.85	95.37	95.90	96.42	96.95	97.47	97.99	98.52	99.04	19	49.2	169.0	191.0
19	99.57	100.09	100.61	101.14	101.66	102.19	102.71	103.23	103.76	104.28	20	51.8	168.3	191.7
20	104.81	105.33	105.85	106.38	106.90	107.43	107.95	108.47	109.00	109.52	21	54.6	167.5	192.5
21	110.05	110.57	111.09	111.62	112.14	112.67	113.19	113.71	114.24	114.77	22	57.3	166.8	193.2
22	115.29	115.81	116.33	116.86	117.38	117.91	118.43	118.96	119.46	120.00	23	60.2	166.0	194.0
23	120.53	121.05	121.58	122.10	122.62	123.15	123.67	124.20	124.72	125.25	24	63.0	165.3	194.7
24	125.77	126.29	126.82	127.34	127.86	128.39	128.91	129.44	129.96	130.48	25	65.8	164.5	195.5
25	131.01	131.53	132.06	132.58	133.10	133.63	134.15	134.68	135.20	135.72	26	68.7	163.6	196.4
26	136.25	136.77	137.30	137.82	138.34	138.87	139.39	139.92	140.44	140.96	27	71.6	162.6	197.4
27	141.49	142.01	142.54	143.06	143.58	144.11	144.63	145.16	145.68	146.20	28	74.6	161.7	198.3
28	146.73	147.25	147.78	148.30	148.82	149.35	149.87	150.40	150.92	151.45	29	77.7	160.7	199.3
29	151.97	152.49	153.02	153.54	154.07	154.59	155.11	155.64	156.16	156.69	30	80.8	159.6	200.4
30	157.21	157.73	158.26	158.78	159.31	159.83	160.35	160.88	161.40	161.93	31	84.0	158.5	201.5
31	162.45	162.97	163.50	164.02	164.55	165.07	165.59	166.12	166.64	167.17	32	87.3	157.3	202.7
32	167.69	168.21	168.74	169.26	169.79	170.31	170.83	171.36	171.88	172.41	33	90.7	155.9	204.1
33	172.93	173.45	173.98	174.50	175.03	175.55	176.07	176.60	177.12	177.65	34	94.2	154.5	205.5
34	178.17	178.69	179.22	179.74	180.27	180.79	181.31	181.84	182.36	182.89	35	97.9	152.8	207.2
35	183.41	183.94	184.46	184.98	185.51	186.03	186.56	187.08	187.60	188.13	36	101.7	151.0	209.0
36	188.65	189.18	189.70	190.22	190.75	191.27	...	...	...	...	37	106.0	148.7	211.3
											38	110.6	146.2	213.8
											39	116.1	142.7	217.3
											40	124.2	136.5	223.5
											40.15	135.0	...	225.0

TABLE XVII.—*contd.*

Mars' Anomaly.

+	Degrees.										—	Degrees.									
	0	1	2	3	4	5	6	7	8	9		0	1	2	3	4	5	6	7	8	9
0	0.0	0.5	0.9	1.4	1.9	2.4	2.9	3.4	3.9	4.4	0	180.0	180.5	180.9	181.4	181.9	182.4	182.9	183.4	183.9	184.4
1	4.8	5.3	5.8	6.3	6.7	7.2	7.7	8.2	8.7	9.2	1	184.8	185.3	185.8	186.3	186.7	187.2	187.7	188.2	188.7	189.2
2	9.7	10.2	10.7	11.2	11.7	12.2	12.7	13.2	13.7	14.2	2	189.7	190.2	190.7	191.2	191.7	192.2	192.7	193.2	193.7	194.2
3	14.7	15.2	15.7	16.2	16.7	17.3	17.8	18.3	18.8	19.4	3	194.7	195.2	195.7	196.2	196.7	197.3	197.8	198.3	198.8	199.4
4	19.9	20.4	20.9	21.4	22.0	22.5	23.0	23.6	24.1	24.7	4	199.9	200.4	200.9	201.4	202.0	202.5	203.0	203.6	204.1	204.7
5	25.2	25.7	26.3	26.9	27.4	28.0	28.6	29.1	29.7	30.2	5	205.2	205.7	206.3	206.9	207.4	208.0	208.6	209.1	209.7	210.2
6	30.8	31.4	32.0	32.6	33.2	33.7	34.4	35.0	35.6	36.2	6	210.8	211.4	212.0	212.6	213.2	213.7	214.4	215.0	215.6	216.2
7	36.9	37.5	38.1	38.7	39.4	40.1	40.7	41.4	42.1	42.7	7	216.9	217.5	218.1	218.7	219.4	220.1	220.7	221.4	222.1	222.7
8	43.4	44.1	44.8	45.5	46.3	47.0	47.7	48.5	49.2	50.0	8	223.4	224.1	224.8	225.5	226.3	227.0	227.7	228.5	229.2	230.0
9	50.8	51.6	52.4	53.2	54.2	55.0	55.9	56.8	57.7	58.7	9	230.8	231.6	232.4	233.2	234.2	235.0	235.9	236.8	237.7	238.7
10	59.7	60.7	61.8	62.9	64.0	65.2	66.5	67.7	69.2	70.6	10	239.7	240.7	241.8	242.9	244.0	245.2	246.5	247.7	249.2	250.6
11	72.2	74.1	76.1	78.4	81.2	85.7	...	...	...	...	11	352.2	254.1	256.1	258.4	261.2	265.7	...	...	...	...

Maximum Equation 11.53 for Anomaly of 90.00.

Maximum Equation 11.53 for Anomaly of 270.00.

+	Degrees.										—	Degrees.									
	9	8	7	6	5	4	3	2	1	0		9	8	7	6	5	4	3	2	1	0
11	...	...	...	...	94.2	98.7	101.6	103.9	105.9	107.8	11	...	...	...	...	274.2	278.7	281.6	283.9	285.9	287.8
10	109.4	110.8	112.3	113.5	114.8	116.0	117.1	118.2	119.3	120.3	10	289.4	290.8	292.3	293.5	294.8	296.0	297.1	298.2	299.3	300.3
9	121.3	122.3	123.2	124.1	125.0	125.8	126.8	127.6	128.4	129.2	9	301.3	302.3	303.2	304.1	305.0	305.8	306.8	307.6	308.4	309.2
8	130.0	130.8	131.5	132.3	133.0	133.7	134.5	135.2	135.9	136.6	8	310.0	310.8	311.5	312.3	313.0	313.7	314.5	315.2	315.9	316.6
7	137.3	137.9	138.6	139.3	139.9	140.6	141.3	141.9	142.5	143.1	7	317.3	317.9	318.6	319.3	319.9	320.6	321.3	321.9	322.5	323.1
6	143.8	144.4	145.0	145.6	146.3	146.8	147.4	148.0	148.6	149.2	6	323.8	324.4	325.0	325.6	326.3	326.8	327.4	328.0	328.6	329.2
5	149.8	150.3	150.9	151.4	152.0	152.6	153.1	153.7	154.3	154.8	5	329.8	330.3	330.9	331.4	332.0	332.6	333.1	333.7	334.3	334.8
4	155.3	155.9	156.4	157.0	157.5	158.0	158.6	159.1	159.6	160.1	4	335.3	335.9	336.4	337.0	337.5	338.0	338.6	339.1	339.6	340.1
3	160.6	161.2	161.7	162.2	162.7	163.3	163.8	164.3	164.8	165.3	3	340.6	341.2	341.7	342.2	342.7	343.3	343.8	344.3	344.8	345.3
2	165.8	166.3	166.8	167.3	167.8	168.3	168.8	169.3	169.8	170.3	2	345.8	346.3	346.8	347.3	347.8	348.3	348.8	349.3	349.8	350.3
1	170.8	171.3	171.8	172.3	172.8	173.3	173.7	174.2	174.7	175.2	1	350.8	351.3	351.8	352.3	352.8	353.3	353.7	354.2	354.7	355.2
0	175.6	176.1	176.6	177.1	177.6	178.1	178.6	179.1	179.5	180.0	0	355.6	356.1	356.6	357.1	357.6	358.1	358.6	359.1	359.5	360.0

MERCURY.

Data for calculating Latitude and geocentric Longitude of Mercury from B. C. 1 to A. D. 2000.

Mercury's mean motion for Centuries.

A.D.	Kaliyuga.	Mean Long. at commence- ment of Solar Year.	Longi- tude of apsis.	Longi- tude of node.	A.D.	Kaliyuga.	Mean Long. at commence- ment of Solar Year.	Longi- tude of apsis.	Longi- tude of node.
		Deg.	Deg.	Deg.			Deg.	Deg.	Deg.
1 B.C.	3101 K.Y.	209.3843	220.4118	20.7580	1000 A.D.	4101 K.Y.	249.5645	220.4425	20.7173
100 A.D.	3201	285.4023	220.4149	20.7539	1100	4201	325.5825	220.4455	20.7133
200	3301	1.4203	220.4180	20.7499	1200	4301	41.6005	220.4486	20.7092
300	3401	77.4383	220.4210	20.7458	1300	4401	117.6185	220.4517	20.7051
400	3501	153.4563	220.4241	20.7417	1400	4501	193.6365	220.4547	20.7011
500	3601	229.4744	220.4272	20.7377	1500	4601	269.6546	220.4578	20.6970
600	3701	305.4924	220.4302	20.7336	1600	4701	345.6726	220.4609	20.6929
700	3801	21.5104	220.4333	20.7295	1700	4801	61.6906	220.4639	20.6889
800	3901	97.5284	220.4363	20.7255	1800	4901	137.7086	220.4670	20.6848
900	4001	173.5464	220.4394	20.7214	1900	5001	213.7266	220.4701	20.6807
					2000	5101	289.7447	220.4731	20.6767

Mercury's mean motion for Odd Years.

Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.
1	54.76	11	242.36	21	69.96	31	257.57	41	85.17	51	272.77	61	100.37	71	287.97	81	115.57
2	109.52	12	297.12	22	124.72	32	312.33	42	139.93	52	327.53	62	155.13	72	342.73	82	170.33
3	164.28	13	251.88	23	179.48	33	7.09	43	194.69	53	22.29	63	209.89	73	37.49	83	225.09
4	219.04	14	46.64	24	234.24	34	61.85	44	249.45	54	77.05	64	264.65	74	92.25	84	279.85
5	273.80	15	101.40	25	289.00	35	116.61	45	304.21	55	131.81	65	319.41	75	147.01	85	334.61
6	328.56	16	156.16	26	343.76	36	171.37	46	358.97	56	186.57	66	14.17	76	201.77	86	29.37
7	23.32	17	210.92	27	38.52	37	226.13	47	53.73	57	241.33	67	68.93	77	256.53	87	84.13
8	78.08	18	265.68	28	93.28	38	280.89	48	108.49	58	296.09	68	123.69	78	311.29	88	138.89
9	132.84	19	320.44	29	148.04	39	335.65	49	163.25	59	350.85	69	178.45	79	6.05	89	193.66
10	187.60	20	15.20	30	202.80	40	30.41	50	218.01	60	45.61	70	233.21	80	60.81	90	248.42
																100	76.02

TABLE XVII.—*contd.*

Mercury's mean motion for Days.											Mercury's Annual Equation.		Mercury's Anomaly.			
0	1	2	3	4	5	6	7	8	9		+	—	+	+	—	—
Days.	Degrees.										Degrees.		Degrees.			
0	...	4.09	8.18	12.28	16.37	20.46	24.55	28.65	32.74	36.83	0	0.0	360.0	0.0	0.0	180.0
1	40.92	45.02	49.11	53.20	57.29	61.38	65.48	69.57	73.66	77.75	1	3.7	356.3	0.1	1.2	178.8
2	81.87	85.94	90.03	94.12	98.22	102.31	106.40	110.49	114.59	118.68	2	7.4	352.6	0.2	2.4	177.6
3	122.77	126.86	130.95	135.05	139.14	143.23	147.32	151.42	155.51	159.60	3	11.2	348.8	0.3	3.6	176.4
4	163.69	167.79	171.88	175.97	180.06	184.15	188.25	192.34	196.43	200.52	4	14.9	345.1	0.4	4.9	175.1
5	204.62	208.71	212.80	216.89	220.99	225.08	229.17	233.26	237.36	241.45	5	18.7	341.3	0.5	6.0	174.0
6	245.54	249.63	253.72	257.82	261.91	266.00	270.09	274.19	278.28	282.37	6	22.5	337.5	0.6	7.2	172.8
7	286.46	290.56	294.65	298.74	302.83	306.92	311.02	315.11	319.20	323.29	7	26.4	333.6	0.7	8.5	171.5
8	327.39	331.48	335.57	339.66	343.76	347.85	351.94	356.03	0.13	4.22	8	30.2	329.8	0.8	9.7	170.3
9	8.31	12.40	16.49	20.59	24.68	28.77	32.86	36.96	41.05	45.14	9	34.7	325.3	0.9	11.0	169.0
10	49.23	53.33	57.42	61.51	65.60	69.69	73.79	77.88	81.97	86.06	10	38.2	321.8	1.0	12.2	167.8
11	90.16	94.25	98.34	102.43	106.53	110.62	114.71	118.80	122.90	126.99	11	42.3	317.7	1.1	13.5	166.5
12	131.08	135.17	139.26	143.36	147.45	151.54	155.63	159.73	163.82	167.91	12	46.5	313.5	1.2	14.7	165.3
13	172.00	176.10	180.19	184.28	188.37	192.47	196.56	200.65	204.74	208.83	13	50.7	309.3	1.3	16.1	163.9
14	212.93	217.02	221.11	225.20	229.30	233.39	237.48	241.57	245.67	249.76	14	55.2	304.8	1.4	17.4	162.6
15	253.85	257.94	262.03	266.13	270.22	274.31	278.40	282.50	286.59	290.68	15	59.8	300.2	1.5	18.7	161.3
16	294.77	298.87	302.96	307.05	311.14	315.24	319.33	323.42	327.51	331.60	16	64.6	295.4	1.6	20.1	159.9
17	335.70	339.79	343.88	347.97	352.07	356.16	0.25	4.34	8.44	12.53	17	69.8	290.2	1.7	21.5	158.5
18	16.62	20.71	24.80	28.90	32.99	37.08	41.17	45.27	49.36	53.45	18	75.4	284.6	1.8	22.7	157.3
19	57.54	61.64	65.73	69.82	73.91	78.01	82.10	86.19	90.28	94.37	19	81.6	278.4	1.9	24.2	155.8
20	98.47	102.56	106.65	110.74	114.84	118.93	123.02	127.11	131.21	135.30	20	88.7	271.3	2.0	25.6	154.4
21	139.39	143.48	147.58	151.67	155.76	159.85	163.94	168.04	172.98	176.22	21	98.6	261.4	2.1	27.0	153.0
22	180.31	184.41	188.50	192.59	196.68	200.78	204.87	208.96	213.05	217.15	21.5	112.2	247.8	2.2	28.5	151.5
23	221.24	225.33	229.42	233.51	237.61	241.70	245.80	249.88	253.98	258.07	21	+	—	2.3	29.9	150.1
24	262.16	266.25	270.35	274.44	278.53	282.62	286.71	290.80	294.90	298.99	21	123.7	236.3	2.4	31.4	148.6
25	303.08	307.18	311.27	315.36	319.45	323.55	327.64	331.73	335.82	339.92	20	131.5	228.5	2.5	33.0	147.0
26	344.01	348.10	352.19	356.28	0.38	4.47	8.56	12.65	16.75	20.84	19	136.6	223.4	2.6	34.5	145.5
27	24.93	29.02	33.12	37.21	41.30	45.39	49.49	53.58	57.67	61.76	18	140.7	219.3	2.7	36.0	144.0
28	65.85	69.95	74.04	78.13	82.22	86.32	90.41	94.50	98.59	102.69	17	144.3	215.7	2.8	37.7	142.3
29	106.78	110.87	114.96	119.05	123.15	127.24	131.33	135.42	139.52	143.61	16	147.4	212.6	2.9	39.4	140.6
30	147.70	151.79	155.89	159.98	164.07	168.16	172.26	176.35	180.44	184.53	15	150.3	209.7	3.0	41.2	138.8
31	188.62	192.72	196.81	200.90	204.99	209.09	213.18	217.27	221.36	225.46	14	152.9	207.1	3.1	42.9	137.1
32	229.55	233.64	237.73	241.82	245.92	250.00	254.10	258.19	262.29	266.38	13	155.3	204.7	3.2	44.7	135.3
33	270.47	274.56	278.66	282.75	286.84	290.93	295.03	299.12	303.21	307.30	12	157.6	202.4	3.3	46.6	133.4
34	311.39	315.49	319.58	323.67	327.76	331.86	335.95	340.04	344.13	348.23	11	159.8	200.2	3.4	48.5	131.5
35	352.32	356.41	0.50	4.60	8.69	12.78	16.87	20.96	25.06	29.15	10	161.9	198.1	3.5	50.6	129.4
36	33.24	37.33	41.43	45.52	49.61	53.70	...	...	...	...	9	163.9	196.1	3.6	52.7	127.3
											8	165.8	194.2	3.7	55.0	125.0
											7	167.7	192.3	3.8	57.5	122.5
											6	169.5	190.5	3.9	60.0	120.0
											5	171.3	188.7	4.0	63.0	117.0
											4	173.1	186.9	4.1	66.0	114.0
											3	174.8	185.2	4.2	69.7	110.2
											2	176.6	183.4	4.3	74.0	106.0
											1	178.3	181.7	4.4	80.5	99.5
											0	180.0	180.0	4.5	90.0	90.0

JUPITER.

Data for calculating Latitude and Geocentric Longitude of Jupiter from B.C. 1 to A.D. 2000.

Jupiter's mean motion for Centuries.									
A.D.	Kaliyuga.	Mean long. at commence- ment of Solar Year.	Longi- tude of apsis.	Longi- tude of node.	A.D.	Kaliyuga.	Mean long. at commence- ment of Solar Year.	Longi- tude of apsis.	Longi- tude of node.
		Deg.	Deg.	Deg.			Deg.	Deg.	Deg.
1 B.C.	3101 K.Y.	163.1655	171.2250	79.6967	1000 A.D.	4101 K.Y.	270.6117	171.3001	79.68
100 A.D.	3201	317.9101	171.2325	79.6952	1100	4201	65.3563	171.3076	79.68
200	3301	112.6547	171.2400	79.6938	1200	4301	220.1009	171.3151	79.67
300	3401	267.3993	171.2475	79.6923	1300	4401	14.8455	171.3226	79.67
400	3501	62.1439	171.2550	79.6909	1400	4501	169.5901	171.3301	79.67
500	3601	216.8885	171.2625	79.6894	1500	4601	324.3347	171.3376	79.67
600	3701	11.6331	171.2700	79.6880	1600	4701	119.0793	171.3451	79.67
700	3801	166.3778	171.2776	79.6865	1700	4801	273.8239	171.3526	79.67
800	3901	321.1225	171.2851	79.6851	1800	4901	68.5685	171.3601	79.67
900	4001	115.8671	171.2926	79.6836	1900	5001	223.3130	171.3676	79.66
					2000	5101	18.0576	171.3752	79.66

TABLE XVII.—contd.

Jupiter's mean motion for Odd Years.

Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.
1	30.35	11	333.82	21	277.30	31	220.77	41	164.24	51	107.72	61	51.19	71	354.67
2	60.69	12	4.17	22	307.64	32	251.12	42	194.59	52	138.07	62	81.54	72	25.02
3	91.04	13	34.52	23	337.99	33	281.46	43	224.94	53	168.41	63	111.89	73	55.36
4	121.39	14	64.86	24	8.34	34	311.81	44	255.29	54	198.76	64	142.24	74	85.71
5	151.74	15	95.21	25	38.69	35	342.16	45	285.63	55	229.11	65	172.58	75	116.06
6	182.08	16	125.56	26	69.03	36	12.51	46	315.98	56	259.46	66	202.93	76	146.41
7	212.43	17	155.91	27	99.38	37	42.85	47	346.33	57	289.80	67	233.28	77	176.75
8	242.78	18	186.25	28	129.73	38	73.20	48	16.68	58	320.15	68	263.63	78	207.10
9	273.13	19	216.60	29	160.07	39	103.55	49	47.02	59	350.50	69	293.97	79	237.45
10	303.47	20	246.95	30	190.42	40	133.90	50	77.37	60	20.85	70	324.32	80	267.80
												90	211.27	100	154.74

Jupiter's mean motion for Days.

0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
Days.										Days.									
Degrees.										Degrees.									
0	...	0.80	0.17	0.25	0.33	0.41	0.50	0.58	0.66	0.75	19	15.79	15.87	15.95	16.04	16.12	16.20	16.29	16.37
1	0.83	0.91	1.00	1.08	1.16	1.25	1.33	1.41	1.50	1.58	20	16.62	16.70	16.78	16.87	16.95	17.03	17.12	17.20
2	1.66	1.74	1.83	1.91	1.99	2.07	2.16	2.24	2.33	2.41	21	17.45	17.53	17.61	17.70	17.78	17.86	17.95	18.03
3	2.49	2.58	2.66	2.74	2.82	2.91	2.99	3.07	3.16	3.24	22	18.28	18.36	18.45	18.53	18.61	18.70	18.78	18.86
4	3.32	3.41	3.49	3.57	3.66	3.74	3.82	3.90	3.99	4.07	23	19.11	19.19	19.28	19.36	19.44	19.53	19.61	19.69
5	4.15	4.24	4.32	4.40	4.49	4.57	4.65	4.74	4.82	4.90	24	19.94	20.02	20.11	20.19	20.27	20.36	20.44	20.52
6	4.99	5.07	5.15	5.23	5.32	5.40	5.48	5.57	5.65	5.73	25	20.77	20.86	20.94	21.02	21.11	21.19	21.27	21.35
7	5.82	5.90	5.98	6.07	6.15	6.23	6.31	6.40	6.48	6.56	26	21.60	21.69	21.77	21.85	21.94	22.02	22.10	22.18
8	6.65	6.73	6.81	6.90	6.98	7.06	7.15	7.23	7.31	7.39	27	22.43	22.52	22.60	22.68	22.77	22.85	22.93	23.02
9	7.48	7.56	7.64	7.73	7.81	7.89	7.98	8.06	8.14	8.23	28	23.27	23.35	23.43	23.51	23.60	23.68	23.76	23.85
10	8.31	8.39	8.47	8.56	8.64	8.72	8.81	8.89	8.97	9.06	29	24.10	24.18	24.26	24.35	24.43	24.51	24.59	24.68
11	9.14	9.22	9.31	9.39	9.47	9.55	9.64	9.72	9.80	9.89	30	24.93	25.01	25.09	25.18	25.26	25.34	25.43	25.51
12	9.97	10.05	10.14	10.22	10.30	10.39	10.47	10.55	10.64	10.72	31	25.76	25.84	25.92	26.01	26.09	26.17	26.26	26.34
13	10.80	10.88	10.97	11.05	11.13	11.22	11.30	11.38	11.47	11.55	32	26.59	26.67	26.75	26.84	26.92	27.00	27.09	27.17
14	11.63	11.72	11.80	11.88	11.96	12.05	12.13	12.21	12.30	12.38	33	27.42	27.50	27.59	27.67	27.75	27.84	27.92	28.00
15	12.46	12.55	12.63	12.71	12.80	12.88	12.96	13.04	13.13	13.21	34	28.25	28.33	28.42	28.50	28.58	28.67	28.75	28.83
16	13.29	13.38	13.46	13.54	13.63	13.71	13.79	13.88	13.96	14.04	35	29.08	29.16	29.25	29.33	29.41	29.50	29.58	29.66
17	14.13	14.21	14.29	14.37	14.46	14.54	14.62	14.71	14.79	14.87	36	29.91	30.00	30.08	30.16	30.24	30.33	...	...
18	14.96	15.04	15.12	15.21	15.29	15.37	15.45	15.54	15.62	15.70									

Jupiter's Annual Equation.

+	0	1	2	3	4	5	6	7	8	9	—	0	1	2	3	4	5	6	7	8	9
Degrees.											Degrees.										
0	0.0	0.6	1.2	1.8	2.4	3.1	3.7	4.3	4.9	5.5	0	180.0	180.4	180.8	181.3	181.7	182.1	182.5	182.9	183.3	183.7
1	6.1	6.7	7.4	8.0	8.6	9.2	9.8	10.4	11.1	11.7	1	184.1	184.5	185.0	185.4	185.8	186.2	186.6	187.0	187.5	187.9
2	12.2	12.9	13.5	14.1	14.7	15.4	16.0	16.6	17.2	17.9	2	188.3	188.7	189.1	189.6	190.0	190.4	190.8	191.3	191.7	192.1
3	18.5	19.1	19.7	20.4	21.0	21.6	22.2	22.9	23.5	24.2	3	192.5	193.0	193.4	193.8	194.3	194.7	195.1	195.5	196.0	196.4
4	24.8	25.4	26.1	26.7	27.4	28.0	28.6	29.2	29.9	30.6	4	196.9	197.3	197.8	198.2	198.6	199.1	199.6	200.0	200.5	200.9
5	31.2	31.9	32.6	33.2	33.9	34.5	35.2	35.9	36.6	37.2	5	201.4	201.8	202.3	202.8	203.2	203.7	204.2	204.7	205.2	205.6
6	37.9	38.6	39.3	40.0	40.7	41.4	42.0	42.8	43.5	44.2	6	206.1	206.6	207.1	207.6	208.1	208.6	209.1	209.6	210.1	210.7
7	44.9	45.7	46.4	47.2	47.9	48.6	49.4	50.2	50.9	51.7	7	211.2	211.7	212.3	212.8	213.4	213.9	214.5	215.1	215.6	216.2
8	52.4	53.2	54.0	54.8	55.7	56.4	57.3	58.2	59.0	59.8	8	216.8	217.4	217.9	218.6	219.2	219.8	220.4	221.1	221.8	222.4
9	60.7	61.6	62.5	63.4	64.4	65.3	66.3	67.2	68.3	69.4	9	223.2	223.8	224.6	225.3	226.0	226.8	227.6	228.3	229.2	229.9
10	70.4	71.5	72.7	73.9	75.0	76.4	77.6	79.0	80.5	82.0	10	230.9	231.8	232.8	233.8	234.8	236.0	237.0	238.1	239.4	240.8
11	83.7	85.5	87.3	90.0	93.0	97.5	...	...	...	...	11	242.3	243.8	245.8	247.8	250.5	255.0	...	...	...	...

Maximum Equation 11.54 for Anomaly of 103.00.

+	9	8	7	6	5	4	3	2	1	0
Degrees.										
11	...	...	...	...	105.0	109.5	112.2	114.2	116.2	117.7
10	119.2	120.6	121.9	123.0	124.0	125.2	126.2	127.2	128.2	129.1
9	130.1	130.8	131.7	132.4	133.2	134.0	134.7	135.4	136.2	136.8
8	137.6	138.2	138.9	139.6	140.2	140.8	141.4	142.1	142.6	143.2
7	143.8	144.4	144.9	145.5	146.1	146.6	147.2	147.7	148.3	148.8
6	149.3	149.9	150.4	150.9	151.4	151.9	152.4	152.9	153.4	153.9
5	154.4	154.8	155.3	155.8	156.3	156.8	157.2	157.7	158.2	158.6
4	159.1	159.5	160.0	160.4	160.9	161.4	161.8	162.2	162.7	163.1
3	163.6	164.0	164.5	164.9	165.3	165.7	166.2	166.6	167.0	167.5
2	167.9	168.3	168.7	169.2	169.6	170.0	170.4	170.9	171.3	171.7
1	172.1	172.5	173.0	173.4	173.8	174.2	174.6	175.0	175.5	175.9
0	176.3	176.7	177.1	177.5	177.9	178.3	178.7	179.2	179.6	180.0

Maximum Equation 11.54 for Anomaly of 257.00

—	9	8	7	6	5	4	3	2	1	0
Degrees.										
11	...	...	...	...	262.5	267.0	270.0	272.5	274.5	276.3
10	278.0	279.5	281.0	282.4	283.6	285.0	286.4	287.3	288.5	289.6
9	290.6	291.7	292.8	293.7	294.7	295.6	296.6	297.5	298.4	299.3
8	300.2	301.0	301.8	302.7	303.6	304.3	305.2	306.0	306.8	307.6
7	308.3	309.1	309.8	310.6	311.4	312.1	312.8	313.6	314.3	315.1
6	315.8	316.5	317.2	318.0	318.6	319.3	320.0	320.7	321.4	322.1
5	322.8	323.4	324.1	324.8	325.5	326.1	326.8	327.4	328.1	328.8
4	329.4	330.1	330.8	331.4	332.0	332.6	333.3	333.9	334.6	335.2
3	335.8	336.5	337.1	337.8	338.4	339.0	339.6	340.3	340.9	341.5
2	342.1	342.8	343.4	344.0	344.6	345.3	345.9	346.5	347.1	347.8
1	348.3	348.9	349.6	350.2	350.8	351.4	352.0	352.6	353.3	353.9
0	354.5	355.1	355.7	356.3	356.9	357.6	358.2	358.8	359.4	360.0

Jupiter's Anomaly.

+ 0 1 2 3 4 5 6 7 8 9											— 0 1 2 3 4 5 6 7 8										
Degrees.											Degrees.										
0	0.0	1.1	2.2	3.2	4.4	5.5	6.6	7.7	8.8	9.9	0	180.0	181.1	182.2	183.2	184.4	185.5	186.6	187.7	188.8	189.9
1	11.0	12.2	13.3	14.5	15.6	16.7	17.9	19.1	20.2	21.5	1	191.0	192.2	193.3	194.5	195.6	196.7	197.9	199.0	200.2	201.5
2	22.6	23.9	25.1	26.4	27.6	28.9	30.2	31.5	32.9	34.1	2	202.6	203.9	205.1	206.4	207.6	208.9	210.2	211.5	212.9	214.1
3	35.5	37.0	38.4	39.9	41.4	42.9	44.5	46.1	47.7	49.5	3	215.5	217.0	218.4	219.9	221.4	222.9	224.5	226.1	227.7	229.2
4	51.2	53.1	55.0	57.1	59.2	61.7	64.0	67.0	70.0	74.0	4	231.2	233.1	235.0	237.1	239.2	241.7	244.0	247.0	250.2	253.5
5	77.5	90.0	...	...	...	...	...	...	...	...	5	267.5	270.0	...	...	...	...	...	...	...	...
Maximum Equation 5.0994 for Anomaly of 90.00											Maximum Equation 5.0994 for Anomaly of 270.00										
+ 9 8 7 6 5 4 3 2 1 0											— 9 8 7 6 5 4 3 2 1										
Degrees.											Degrees.										
5	...	...	...	...	...	...	...	...	90.0	102.5	5	...	...	...	...	...	...	...	...	270.0	282.5
4	106.0	110.0	113.0	116.0	118.3	120.8	122.9	125.0	126.9	128.8	4	286.0	290.0	293.0	296.0	298.3	300.8	302.9	305.0	306.9	308.8
3	130.5	132.3	133.9	135.5	137.1	138.6	140.1	141.6	143.0	144.5	3	310.5	312.3	313.9	315.5	317.1	318.6	320.1	321.6	323.0	324.5
2	145.9	147.1	148.5	149.8	151.1	152.4	153.6	154.9	156.1	157.4	2	325.9	327.1	328.5	329.8	331.1	332.4	333.6	334.9	336.1	337.4
1	158.5	159.8	160.9	162.1	163.3	164.4	165.5	166.7	167.8	169.0	1	338.5	339.8	340.9	342.1	343.3	344.4	345.5	346.7	347.8	348.9
0	170.1	171.2	172.3	173.4	174.5	175.6	176.8	177.8	178.9	180.0	0	350.1	351.2	352.3	353.4	354.5	355.6	356.8	357.8	358.9	360.0

VENUS.

Data for calculating Latitude and geocentric Longitude of Venus from B.C. 1 to A.D. 2000.

Venus' mean motion for Centuries.

A.D.	Kaliyuga.	Mean long. at commence- ment of Solar Year.	Longi- tude of apsis.	Longi- tude of node.	A.D.	Kaliyuga.	Mean long. at commence- ment of Solar Year.	Longi- tude of apsis.	Longi- tude of node.
		Deg.	Deg.	Deg.			Deg.	Deg.	Deg.
1 B.C.	3101 K.Y.	303.2772	79.7837	59.8039	1000 A.D.	4101 K.Y.	133.1288	79.8283	59.72
100 A.D.	3201	142.2624	79.7882	59.7964	1100	4201	332.1140	79.8328	59.72
200	3301	341.2475	79.7926	59.7889	1200	4301	171.0991	79.8372	59.71
300	3401	180.2327	79.7971	59.7814	1300	4401	10.0843	79.8417	59.70
400	3501	19.2178	79.8016	59.7738	1400	4501	209.0694	79.8461	59.69
500	3601	218.2030	79.8060	59.7663	1500	4601	48.0546	79.8506	59.69
600	3701	57.1882	79.8105	59.7588	1600	4701	247.0398	79.8550	59.68
700	3801	256.1733	79.8149	59.7513	1700	4801	86.0249	79.8595	59.67
800	3901	95.1585	79.8194	59.7438	1800	4901	285.0101	79.8639	59.66
900	4001	294.1436	79.8238	59.7363	1900	5001	123.9952	79.8684	59.66
					2000	5101	322.9804	79.8729	59.65

Venus' mean motion for Odd Years.

[illegible]

TABLE XVII.—contd.

Venus' mean motion for Days.										Venus' Annual Equation.				Venus' Anomaly.			
Days. 0	1	2	3	4	5	6	7	8	9		+	+	—	—		+	—
Degrees.											Degrees.				Degrees.		
0	...	1.60	3.20	4.81	6.41	8.01	9.61	11.21	12.82	14.42	0	0.0	180.0	180.0	360.0		
1	16.02	17.62	19.23	20.83	22.43	24.03	25.63	27.24	28.84	30.44	1	2.4	179.6	180.4	357.6	0.0	0.0 180.0
2	32.04	33.64	35.25	36.85	38.45	40.05	41.65	43.26	44.86	46.46	2	4.7	179.2	180.8	355.3	0.1	3.0 183.0
3	48.06	49.67	51.27	52.87	54.47	56.07	57.68	59.28	60.88	62.48	3	7.1	178.8	181.2	352.9	0.2	6.0 186.0
4	64.08	65.68	67.29	68.89	70.49	72.09	73.70	75.30	76.90	78.50	4	9.5	178.5	181.5	350.5		
5	80.11	81.71	83.31	84.91	86.51	88.12	89.72	91.32	92.92	94.53	5	11.9	178.1	181.9	348.1	0.3	9.2 189.2
6	96.13	97.73	99.33	100.93	102.54	104.14	105.74	107.34	108.94	110.55	6	14.3	177.7	182.3	345.7	0.4	10.2 190.2
7	112.15	113.75	115.35	116.95	118.56	120.16	121.76	123.36	124.97	126.57	7	16.7	177.3	182.7	343.3	0.5	15.5 195.5
8	128.70	129.77	131.37	132.98	134.58	136.18	137.78	139.38	140.99	142.59	8	19.1	176.9	183.1	340.9		
9	144.19	145.79	147.40	149.00	150.60	152.20	153.80	155.41	157.01	158.61	9	21.4	176.6	183.4	338.6	0.6	18.7 198.7
10	160.21	161.81	163.42	165.02	166.62	168.22	169.83	171.43	173.03	174.63	10	23.9	176.2	183.8	336.1	0.7	22.2 202.2
11	176.23	177.84	179.44	181.04	182.64	184.24	185.85	187.45	189.05	190.65	11	26.3	175.8	184.2	333.7	0.8	25.7 205.7
12	192.25	193.86	195.46	197.06	198.66	200.27	201.87	203.47	205.07	206.67	12	28.7	175.3	184.7	331.3		
13	208.28	209.88	211.48	213.08	214.69	216.29	217.89	219.49	221.09	222.70	13	31.1	174.9	185.1	328.9	0.9	29.5 209.5
14	224.30	225.90	227.50	229.10	230.71	232.31	233.91	235.51	237.11	238.72	14	33.5	174.5	185.5	326.5	1.0	33.2 213.2
15	240.32	241.92	243.52	245.13	246.73	248.33	249.93	251.53	253.14	254.74	15	35.9	174.1	185.9	324.1	1.1	37.2 217.2
16	256.34	257.94	259.54	261.15	262.75	264.35	265.95	267.56	269.16	270.76	16	38.4	173.7	186.3	321.6		
17	272.36	273.96	275.57	277.17	278.77	280.37	281.97	283.58	285.18	286.78	17	40.8	173.2	186.8	319.2	1.2	41.5 221.5
18	288.38	289.98	291.59	293.19	294.79	296.39	297.99	299.60	301.20	302.80	18	43.2	172.8	187.2	316.8	1.3	45.2 225.2
19	304.40	306.01	307.61	309.21	310.81	312.41	314.02	315.62	317.22	318.82	19	45.7	172.4	187.6	314.3	1.4	51.5 231.5
20	320.43	322.03	323.63	325.23	326.83	328.44	330.04	331.64	333.24	334.84	20	48.2	171.9	188.1	311.8	1.5	57.7 237.5
21	336.45	338.05	339.65	341.25	342.86	344.46	346.06	347.66	349.26	350.87	21	50.6	171.4	188.6	309.4	1.6	64.7 244.7
22	352.47	354.07	355.67	357.27	358.88	0.48	2.08	3.68	5.29	6.89	22	53.1	170.9	189.1	306.9	1.7	75.0 255.0
23	8.49	10.09	11.69	13.30	14.90	16.50	18.10	19.70	21.31	22.91	23	55.6	170.4	189.6	304.4	1.75	90.0 270.0
24	24.51	26.11	27.72	29.32	30.92	32.52	34.12	35.73	37.33	38.93	24	58.2	169.9	190.1	301.8		
25	40.53	42.13	43.74	45.34	46.94	48.54	50.15	51.75	53.35	54.95	25	60.7	169.4	190.6	299.3	+	—
26	56.55	58.16	59.76	61.36	62.96	64.56	66.17	67.77	69.37	70.97	26	63.3	168.9	191.1	296.7		
27	72.57	74.17	75.78	77.38	78.98	80.59	82.19	83.79	85.39	86.99	27	65.9	168.3	191.7	294.1	1.7	105.0 285.0
28	88.60	90.20	91.80	93.40	95.00	96.61	98.21	99.81	101.41	103.02	28	68.4	167.7	192.3	291.6	1.6	115.3 295.3
29	104.62	106.22	107.82	109.42	111.03	112.63	114.23	115.83	117.43	119.04	29	71.1	167.1	192.9	288.9	1.5	122.3 302.2
30	120.64	122.24	123.84	125.45	127.05	128.65	130.25	131.85	133.46	135.06	30	73.8	166.4	193.6	286.2	1.4	128.5 308.5
31	136.66	138.26	139.86	141.47	143.07	144.67	146.27	147.87	149.48	151.08	31	76.4	165.8	194.2	283.6	1.3	134.8 314.8
32	152.68	154.28	155.89	157.49	159.09	160.69	162.29	163.90	165.50	167.10	32	79.1	165.1	194.9	280.9	1.2	138.5 318.5
33	168.70	170.30	171.91	173.51	175.11	176.71	178.32	179.92	181.52	183.12	33	81.9	164.3	195.7	278.1	1.1	142.8 322.8
34	184.72	186.33	187.93	189.53	191.13	192.73	194.34	195.94	197.54	199.14	34	84.7	163.5	196.5	275.3	1.0	146.8 326.8
35	200.75	202.35	203.95	205.55	207.15	208.76	210.36	211.96	213.56	215.16	35	87.5	162.7	197.3	272.5	0.9	150.5 330.5
36	216.77	218.37	219.97	221.57	223.18	224.78	...	...	...	...	36	90.4	161.9	198.1	269.6		
37	...	...	...	...	...	...	...	...	...	...	37	93.4	161.0	199.0	266.6	0.8	154.3 334.3
38	...	...	...	...	...	...	...	...	...	...	38	96.4	159.9	200.1	263.6	0.7	157.8 337.8
39	...	...	...	...	...	...	...	...	...	...	39	99.6	158.8	201.2	260.4	0.6	161.3 341.3
40	...	...	...	...	...	...	...	...	...	...	40	102.8	157.7	202.3	257.2		
41	...	...	...	...	...	...	...	...	...	...	41	106.2	156.2	203.8	253.8	0.5	164.5 344.5
42	...	...	...	...	...	...	...	...	...	...	42	109.8	154.6	205.4	250.2	0.4	169.8 349.8
43	...	...	...	...	...	...	...	...	...	...	43	113.6	152.8	207.2	246.4	0.3	170.8 350.8
44	...	...	...	...	...	...	...	...	...	...	44	117.9	150.6	209.4	242.1		
45	...	...	...	...	...	...	...	...	...	...	45	122.9	147.8	212.2	237.1	0.2	174.0 354.0
46	...	...	...	...	...	...	...	...	...	...	46	129.7	142.8	217.2	230.3	0.1	177.0 357.0
46-38	...	...	...	...	...	...	...	...	...	...	46-38	135.0	...	225.0	...	0.0	180.0 360.0

SATURN.

Data for calculating Latitude and geocentric Longitude of Saturn from B.C. 1 to A.D. 2000.
Saturn's mean motion for Centuries.

A.D.	Kaliyuga.	Mean Long. at commence- ment of Solar Year.	Longi- tude of apsis.	Longi- tude of node.	A.D.	Kaliyuga	Mean Long. at commence- ment of Solar Year.	Longi- tude of aapsis.	Longi- tude of node.
		Deg.	Deg	Deg.			Deg.	Deg.	Deg.
1 B.C.	3101 K.Y.	70.5378	236.6194	100.4714	1000 A.D.	4101 K.Y.	49.6072	236.6226	100.4162
100 A.D.	3201	212.4447	236.6197	100.4659	1100	4201	191.5141	236.6229	100.4107
200	3301	354.3517	236.6200	100.4604	1200	4301	333.4211	236.6233	100.4052
300	3401	136.2586	236.6203	100.4548	1300	4401	115.3280	236.6236	100.3997
400	3501	278.1655	236.6207	100.4493	1400	4501	257.2349	236.6239	100.3941
500	3601	60.0725	236.6210	100.4438	1500	4601	39.1419	236.6242	100.3886
600	3701	201.9794	236.6213	100.4383	1600	4701	181.0488	236.6246	100.3831
700	3801	343.8864	236.6216	100.4328	1700	4801	322.9558	236.6249	100.3776
800	3901	125.7933	236.6220	100.4272	1800	4901	104.8627	236.6252	100.3721
900	4001	267.7002	236.6223	100.4217	1900	5001	246.7696	236.6255	100.3665
					2000	5101	28.6766	236.6259	100.3610

TABLE XVII.—*contd.*

Saturn's mean motion for Odd Years.

Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.
1	12.22	11	134.41	21	256.60	31	18.79	41	140.98	51	263.17	61	25.36	71	147.55	81	269.74	91	281.96	101	294.18
2	24.44	12	146.63	22	268.82	32	31.01	42	153.20	52	275.39	62	37.58	72	159.77	82	281.96	92	294.18	102	306.40
3	36.66	13	158.85	23	281.04	33	43.23	43	165.42	53	287.61	63	49.80	73	171.99	83	294.18	93	306.40	103	318.62
4	48.88	14	171.07	24	293.26	34	55.45	44	177.64	54	299.83	64	62.02	74	184.21	84	306.40	94	318.62	104	330.84
5	61.09	15	183.29	25	305.48	35	67.67	45	189.86	55	312.05	65	74.24	75	196.43	85	318.62	95	330.84	105	343.06
6	73.31	16	195.50	26	317.70	36	79.89	46	202.08	56	324.27	66	86.46	76	208.65	86	330.84	96	343.06	106	355.28
7	85.53	17	207.72	27	329.91	37	92.10	47	214.30	57	336.49	67	98.68	77	220.87	87	343.06	97	355.28	107	367.50
8	97.75	18	219.94	28	342.13	38	104.32	48	226.51	58	348.71	68	110.90	78	233.09	88	355.28	98	367.50	108	379.72
9	109.97	19	232.16	29	354.35	39	116.54	49	238.73	59	0.92	69	123.12	79	245.31	89	379.72	99	389.94	109	402.16
10	122.19	20	244.38	30	6.57	40	128.76	50	250.95	60	13.14	70	135.33	80	257.52	90	389.94	100	402.16	110	414.38

Saturn's mean motion for Days.

Days.	0	1	2	3	4	5	6	7	8	9	Days.	0	1	2	3	4	5	6	7	8
Degrees.											Degrees.									
0	...	0.03	0.07	0.10	0.13	0.17	0.20	0.23	0.27	0.30	19	6.36	6.39	6.42	6.46	6.49	6.52	6.56	6.59	6.62
1	0.33	0.37	0.40	0.43	0.47	0.50	0.53	0.57	0.60	0.64	20	6.69	6.72	6.76	6.79	6.83	6.86	6.89	6.93	6.96
2	0.67	0.70	0.74	0.77	0.80	0.84	0.87	0.90	0.94	0.97	21	7.03	7.06	7.09	7.13	7.16	7.19	7.23	7.26	7.29
3	1.00	1.04	1.07	1.10	1.14	1.17	1.20	1.24	1.27	1.30	22	7.36	7.39	7.43	7.46	7.49	7.53	7.56	7.59	7.63
4	1.34	1.37	1.40	1.44	1.47	1.51	1.54	1.57	1.61	1.64	23	7.70	7.73	7.76	7.80	7.83	7.86	7.90	7.93	7.96
5	1.67	1.71	1.74	1.77	1.81	1.84	1.87	1.91	1.94	1.97	24	8.03	8.06	8.10	8.13	8.16	8.20	8.23	8.26	8.29
6	2.01	2.04	2.07	2.11	2.14	2.17	2.21	2.24	2.27	2.31	25	8.36	8.40	8.43	8.46	8.50	8.53	8.57	8.60	8.63
7	2.34	2.38	2.41	2.44	2.48	2.51	2.54	2.58	2.61	2.64	26	8.70	8.73	8.77	8.80	8.83	8.87	8.90	8.93	8.97
8	2.68	2.71	2.74	2.78	2.81	2.84	2.88	2.91	2.94	2.98	27	9.03	9.07	9.10	9.13	9.17	9.20	9.23	9.27	9.30
9	3.01	3.04	3.08	3.11	3.14	3.18	3.21	3.25	3.28	3.31	28	9.37	9.40	9.43	9.47	9.50	9.54	9.57	9.60	9.64
10	3.35	3.38	3.41	3.45	3.48	3.51	3.55	3.58	3.61	3.65	29	9.70	9.74	9.77	9.80	9.84	9.87	9.90	9.94	9.97
11	3.68	3.71	3.75	3.78	3.81	3.85	3.88	3.91	3.95	3.98	30	10.04	10.07	10.10	10.14	10.17	10.20	10.24	10.27	10.31
12	4.01	4.05	4.08	4.12	4.15	4.18	4.22	4.25	4.28	4.32	31	10.37	10.41	10.44	10.47	10.51	10.54	10.57	10.61	10.64
13	4.35	4.38	4.42	4.45	4.48	4.52	4.55	4.58	4.62	4.65	32	10.71	10.74	10.77	10.81	10.84	10.87	10.91	10.94	10.97
14	4.68	4.72	4.75	4.78	4.82	4.85	4.88	4.92	4.95	4.99	33	11.04	11.07	11.11	11.14	11.18	11.21	11.24	11.28	11.31
15	5.02	5.05	5.09	5.12	5.15	5.19	5.22	5.25	5.29	5.32	34	11.38	11.41	11.44	11.48	11.51	11.54	11.58	11.61	11.64
16	5.35	5.39	5.42	5.45	5.49	5.52	5.55	5.59	5.62	5.65	35	11.71	11.74	11.78	11.81	11.84	11.88	11.91	11.94	11.98
17	5.69	5.72	5.75	5.79	5.82	5.85	5.89	5.92	5.96	5.99	36	12.05	12.08	12.11	12.15	12.18	12.21	...	...	...
18	6.02	6.06	6.09	6.12	6.16	6.19	6.22	6.26	6.29	6.32										

Saturn's Annual Equation.

+	0	1	2	3	4	5	6	7	8	9	—	0	1	2	3	4	5	6	7	8
Degrees.											Degrees.									
0	0.0	1.0	2.0	3.1	4.1	5.1	6.1	7.1	8.2	9.2	0	180.0	180.8	181.7	182.5	183.3	184.1	184.9	185.8	186.6
1	10.2	11.2	12.2	13.3	14.4	15.4	16.4	17.5	18.5	19.6	1	188.3	189.1	189.9	190.8	191.6	192.4	193.3	194.1	194.9
2	20.6	21.7	22.7	23.8	24.9	26.0	27.1	28.2	29.2	30.4	2	196.7	197.5	198.4	199.4	200.8	201.1	201.9	202.8	203.8
3	31.5	32.6	33.7	34.9	36.1	37.2	38.4	39.6	40.8	42.0	3	205.6	206.5	207.5	208.4	209.4	210.3	211.3	212.3	213.3
4	43.2	44.5	45.6	47.1	48.5	49.7	51.1	52.5	54.0	55.5	4	215.4	216.5	217.5	218.7	219.8	221.0	222.1	223.4	224.6
5	57.0	58.5	60.1	61.7	63.5	65.4	67.2	69.2	71.5	73.7	5	227.3	228.5	229.8	231.3	233.0	234.6	236.3	238.3	240.0
6	76.2	79.3	82.7	87.5	97.5	...	...	...	...	...	6	244.3	247.3	250.8	255.0	262.5	...	...	...	...

Maximum Equation 6.3767 for Anomaly of 97.50.

+	9	8	7	6	5	4	3	2	1	0
Degrees.										
6	...	...	...	...	97.5	105.0	109.2	112.7	115.7	
5	117.7	120.0	121.7	123.7	125.4	127.0	128.7	130.2	131.5	132.7
4	134.1	135.4	136.6	137.9	139.0	140.2	141.3	142.5	143.5	144.6
3	145.6	146.7	147.7	148.7	149.7	150.6	151.6	152.5	153.5	154.4
2	155.3	156.2	157.2	158.1	158.9	159.2	160.7	161.6	162.5	163.3
1	164.2	165.1	165.9	166.7	167.6	168.4	169.2	170.1	170.9	171.7
0	172.6	173.4	174.2	175.1	175.9	176.7	177.5	178.3	179.2	180.0

Maximum Equation 6.3767 for Anomaly of 262.

—	9	8	7	6	5	4	3	2	1	0
Degrees.										
6	...	...	...	...	262.5	272.5	277.3	280.8	283.3	285.8
5	286.3	288.5	290.8	292.8	294.6	296.5	298.3	299.9	301.5	303.1
4	304.5	306.0	307.5	308.9	310.3	311.5	312.9	314.1	315.5	316.8
3	318.0	319.2	320.4	321.6	322.8	323.9	325.1	326.3	327.4	328.5
2	329.6	330.8	331.8	332.9	334.0	335.1	336.2	337.3	338.3	339.3
1	340.4	341.5	342.5	343.6	344.6	345.6	346.7	347.8	348.8	349.8
0	350.8	351.8	352.9	353.9	354.9	355.9	356.9	358.0	359.0	360.0

Saturn's Anomaly.

+	0	1	2	3	4	5	6	7	8	9	—	0	1	2	3	4	5	6	7	8
Degrees.											Degrees.									
0	0.0	0.7	1.5	2.2	2.9	3.7	4.4	5.2	5.9	6.7	0	180.0	180.7	181.5	182.2	182.9	183.7	184.4	185.2	185.9
1	7.4	8.1	8.9	9.6	10.4	11.2	11.9	12.7	13.4	14.2	1	187.4	188.1	188.9	189.6	190.4	191.2	191.9	192.7	193.4
2	14.9	15.7	16.5	17.2	18.1	18.8	19.6	20.4	21.2	22.0	2	194.9	195.7	196.5	197.2	198.1	198.8	199.6	200.4	201.2
3	22.8	23.7	24.5	25.3	26.1	26.9	27.8	28.7	29.5	30.3	3	202.8	203.7	204.5	205.3	206.1	206.9	207.8	208.7	209.5
4	31.2	32.1	33.0	33.9	34.8	35.7	36.7	37.6	38.5	39.5	4	211.2	212.1	213.0	213.9	214.8	215.7	216.7	217.6	218.5
5	40.5	41.5	42.5	43.5	44.6	45.6	46.7	47.9	49.0	50.1	5	220.5	221.5	222.5	223.5	224.6	225.6	226.7	227.9	229.0
6	51.4	52.5	53.9	55.1	56.5	57.9	59.2	60.9	62.5	64.1	6	231.4	232.5	233.9	235.1	236.5	237.9	239.2	240.9	242.5
7	66.0	67.7	70.0	72.2	75.0	78.2	83.0	90.0	...	...	7	246.0	247.7	250.0	252.2	255.0	258.2	263.0	270.0	...

Maximum Equation 7.6586 for Anomaly of 90.00.

+	9	8	7	6	5	4	3	2	1	0
Degrees.										
7	...	...	90.0	97.0	101.8	105.0	107.8	110.0	112.3	114.0
6	115.9	117.5	119.1	120.8	122.1	123.5	124.9	126.1	127.5	128.6
5	129.9	131.0	132.1	133.3	134.4	135.4	136.5	137.5	138.5	139.5
4	140.5	141.5	142.4	143.3	144.3	145.2	146.1	147.0	147.9	148.8
3	149.7	150.5	151.3	152.2	153.1	153.9	154.7	155.5	156.3	157.2
2	158.0	158.8	159.6	160.4	161.2	161.9	162.8	163.5	164.3	165.1
1	165.8	166.6	167.3	168.1	168.8	169.6	170.4	171.1	171.9	172.6
0	173.3	174.1	174.8	175.6	176.3	177.1	177.8	178.5	179.3	180.0

TABLE XVII. A.

Sun's mean Longitude and Equation for every complete day of Hindu Solar year.

Day	☉'s mean longitude.	Eqn.	Day	☉'s mean longitude.	Eqn.	Day	☉'s mean longitude.	Eqn.	Day	☉'s mean longitude.	Eqn.	Day	☉'s mean longitude.	Eqn.
	Degrees.			Degrees.			Degrees.			Degrees.			Degrees.	
0	357.8606	+2.1378	61	57.9823	+7.267	122	118.1041	-1.4333	183	178.2258	-2.1367	244	238.3476	-7.203
1	358.8462	2.1333	62	58.9679	6.919	123	119.0897	1.4586	184	179.2114	2.1305	245	239.3332	6.833
2	359.8318	2.1228	63	59.9535	6.561	124	120.0753	1.4883	185	180.1970	2.1219	246	240.3188	6.469
3	0.8174	2.1133	64	60.9391	6.192	125	121.0609	1.5133	186	181.1827	2.1133	247	241.3044	6.097
4	1.8030	2.1036	65	61.9247	5.847	126	122.0465	1.5405	187	182.1683	2.1061	248	242.2190	5.739
5	2.7886	2.0967	66	62.9103	5.480	127	123.0321	1.5667	188	183.1539	2.0964	249	243.2756	5.369
6	3.7742	2.0858	67	63.8959	5.111	128	124.0177	1.5919	189	184.1395	2.0853	250	244.2612	5.000
7	4.7598	2.0767	68	64.8815	4.739	129	125.0037	1.6167	190	185.1251	2.0753	251	245.2468	4.636
8	5.7454	2.0647	69	65.8671	4.369	130	125.8889	1.6433	191	186.1107	2.0642	252	246.3324	4.253
9	6.7310	2.0514	70	66.8527	4.000	131	126.9745	1.6667	192	187.0963	2.0519	253	247.2180	3.883
10	7.7166	2.0394	71	67.8383	3.622	132	127.9601	1.6894	193	188.0819	2.0383	254	248.2036	3.500
11	8.7022	2.0267	72	68.8239	3.192	133	128.9457	1.7133	194	189.0675	2.0261	255	249.1892	3.122
12	9.6878	2.0122	73	69.8096	2.869	134	129.9313	1.7358	195	190.0531	2.0125	256	250.1748	2.753
13	10.6734	1.9986	74	70.7952	2.486	135	130.9169	1.7572	196	191.0387	1.9978	257	251.1604	2.369
14	11.6590	1.9833	75	71.7808	2.167	136	131.9025	1.7789	197	192.0243	1.9819	258	252.1460	1.992
15	12.6446	1.9667	76	72.7664	1.717	137	132.8881	1.8000	198	193.0099	1.9661	259	253.1316	1.597
16	13.6302	1.9500	77	73.7520	1.333	138	133.8737	1.8217	199	193.9955	1.9514	260	254.1172	1.228
17	14.6158	1.9333	78	74.7376	0.975	139	134.8593	1.8419	200	194.9811	1.9333	261	255.1029	0.847
18	15.6014	1.9167	79	75.7232	0.600	140	135.8449	1.8597	201	195.9667	1.9161	262	256.0885	0.469
19	16.5870	1.9000	80	76.7088	0.203	141	136.8305	1.8789	202	196.9523	1.9003	263	257.0741	0.086
20	17.5726	1.8833	81	77.6944	-0.167	142	137.8161	1.8980	203	197.9379	1.8808	264	258.0597	+0.394
21	18.5582	1.8622	82	78.6800	-0.550	143	138.8017	1.9167	204	198.9235	1.8600	265	259.0453	0.764
22	19.5438	1.8419	83	79.6656	-0.933	144	139.7873	1.9333	205	199.9091	1.8417	266	260.0309	1.111
23	20.5294	1.8217	84	80.6512	-1.314	145	140.7729	1.9500	206	200.8947	1.8222	267	261.0165	1.469
24	21.5150	1.8025	85	81.6368	-1.692	146	141.7585	1.9667	207	201.8803	1.8014	268	262.0021	1.847
25	22.5006	1.7814	86	82.6224	-2.072	147	142.7441	1.9825	208	202.8659	1.7805	269	262.9877	2.239
26	23.4862	1.7600	87	83.6080	-2.444	148	143.7298	1.9980	209	203.8515	1.7575	270	263.9733	2.586
27	24.4718	1.7383	88	84.5936	-2.833	149	144.7154	2.0122	210	204.8371	1.7369	271	264.9589	2.992
28	25.4574	1.7167	89	85.5792	-3.203	150	145.7010	2.0253	211	205.8227	1.7139	272	265.9445	3.369
29	26.4430	1.6933	90	86.5648	-3.572	151	146.6866	2.0369	212	206.8083	1.6894	273	266.9301	3.739
30	27.4286	1.6680	91	87.5504	-3.955	152	147.6722	2.0492	213	207.7939	1.6664	274	267.9157	4.122
31	28.4142	1.6455	92	88.5360	-4.333	153	148.6578	2.0611	214	208.7795	1.6433	275	268.9013	4.500
32	29.3998	1.6192	93	89.5216	-4.692	154	149.6434	2.0739	215	209.7651	1.6178	276	269.8869	4.869
33	30.3854	1.5955	94	90.5072	-5.061	155	150.6290	2.0858	216	210.7507	1.5922	277	270.8725	5.253
34	31.3710	1.5692	95	91.4928	-5.433	156	151.6146	2.0955	217	211.7363	1.5667	278	271.8581	5.611
35	32.3567	1.5455	96	92.4784	-5.789	157	152.6002	2.1036	218	212.7219	1.5411	279	272.8437	5.990
36	33.3423	1.5167	97	93.4640	-6.167	158	153.5858	2.1136	219	213.7105	1.5130	280	273.8293	6.347
37	34.3279	1.4914	98	94.4496	-6.525	159	154.5714	2.1228	220	214.6931	1.4869	281	274.8149	6.692
38	35.3135	1.4633	99	95.4352	-6.894	160	155.5570	2.1314	221	215.6787	1.4589	282	275.8005	7.061
39	36.2991	1.4358	100	96.4208	-7.228	161	156.5426	2.1383	222	216.6643	1.4308	283	276.7861	7.419
40	37.2847	1.4061	101	97.4064	-7.586	162	157.5282	2.1433	223	217.6499	1.4028	284	277.7717	7.764
41	38.2703	1.3778	102	98.3920	-7.944	163	158.5138	2.1494	224	218.6356	1.3733	285	278.7573	8.122
42	39.2559	1.3480	103	99.3776	-8.289	164	159.4994	2.1567	225	219.6212	1.3439	286	279.7429	8.469
43	40.2415	1.3180	104	100.3632	-8.633	165	160.4850	2.1603	226	220.6068	1.3144	287	280.7285	8.803
44	41.2271	1.2894	105	101.3488	-8.986	166	161.4706	2.1617	227	221.5924	1.2828	288	281.7141	9.147
45	42.2127	1.2586	106	102.3344	-9.333	167	162.4562	2.1667	228	222.5780	1.2533	289	282.6997	9.500
46	43.1983	1.2197	107	103.3200	-9.667	168	163.4418	2.1692	229	223.5636	1.2228	290	283.6853	9.833
47	44.1839	1.1967	108	104.3056	-1.0009	169	164.4274	2.1728	230	224.5492	1.1905	291	284.6709	1.0192
48	45.1695	1.1647	109	105.2912	-1.0333	170	165.4130	2.1742	231	225.5348	1.1589	292	285.6565	1.0508
49	46.1551	1.1347	110	106.2760	-1.0667	171	166.3986	2.1755	232	226.5204	1.1283	293	286.6421	1.0850
50	47.1407	1.1014	111	107.2625	-1.1000	172	167.3842	2.1769	233	227.5060	1.0967	294	287.6277	1.1167
51	48.1263	1.0703	112	108.2481	-1.1308	173	168.3698	2.1755	234	228.4916	1.0614	295	288.6133	1.1483
52	49.1119	1.0369	113	109.2337	-1.1622	174	169.3554	2.1742	235	229.4772	1.0283	296	289.5984	1.1814
53	50.0975	1.0025	114	110.2193	-1.1955	175	170.3410	2.1728	236	230.4628	9953	297	290.5845	1.2130
54	51.0831	9703	115	111.2049	-1.2253	176	171.3266	2.1714	237	231.4484	9622	298	291.5701	1.2439
55	52.0687	9358	116	112.1905	-1.2561	177	172.3122	2.1678	238	232.4340	9280	299	292.5558	1.2747
56	53.0543	9025	117	113.1761	-1.2858	178	173.2978	2.1642	239	233.4196	8928	300	293.5414	1.3036
57	54.0399	8667	118	114.1617	-1.3167	179	174.2834	2.1597	240	234.4052	8597	301	294.5270	1.3322
58	55.0255	8333	119	115.1473	-1.3455	180	175.2690	2.1561	241	235.3908	8228	302	295.5126	1.3622
59	56.0111	7964	120	116.1329	-1.3739	181	176.2546	2.1489	242	236.3764	7894	303	296.4982	1.3903
60	56.9967	7622	121	117.1185	-1.4025	182	177.2402	2.1439	243	237.3620	7536	304	297.4838	1.4197

TABLE XVII B.

RAHU.

Tab. XVII. A.- contd.

Day ☉'s mean
longitude. Eqn.

Degrees.

305	298.4694	+1.4492
306	299.4550	1.4747
307	300.4406	1.5042
308	301.4262	1.5297
309	302.4118	1.5567
310	303.3974	1.5833
311	304.3830	1.6089
312	305.3686	1.6344
313	306.3542	1.6589
314	307.3398	1.6819

315	308.3254	1.7050
316	309.3110	1.7280
317	310.2966	1.7497
318	311.2822	1.7728
319	312.2678	1.7922
320	313.2534	1.8153
321	314.2390	1.8347
322	315.2226	1.8530
323	316.2102	1.8725
324	317.1958	1.8917

325	318.1814	1.9111
326	319.1670	1.9269
327	320.1526	1.9453
328	321.1382	1.9611
329	322.1238	1.9758
330	323.1094	1.9917
331	324.0950	2.0064
332	325.0806	2.0211
333	326.0662	2.0347
334	327.0518	2.0483

335	328.0370	2.0597
336	329.0231	2.0708
337	330.0087	2.0819
338	330.9943	2.0930
339	331.9799	2.1017

340	332.9655	2.1114
341	333.9511	2.1211
342	334.9367	2.1283
343	335.9223	2.1369
344	336.9079	2.1430

345	337.8935	2.1480
346	338.8791	2.1542
347	339.8647	2.1592
348	340.8503	2.1628
349	341.8359	2.1653

350	342.8215	2.1689
351	343.8071	2.1703
352	344.7927	2.1717
353	345.7783	2.1730
354	346.7639	2.1755

355	347.7495	2.1764
356	348.7351	2.1739
357	349.7207	2.1714
358	350.7063	2.1700
359	351.6919	2.1686

360	352.6775	2.1650
361	353.6631	2.1625
362	354.6487	2.1589
363	355.6343	2.1528
364	356.6199	2.1467
365	357.6055	2.1405

Mean place of Rahu for centuries, odd years, days and fractions of days

Mean place of Rahu for Centuries.

	K.Y.	Deg.	A.D.	K.Y.	Deg.	A.D.	K.Y.	Deg.
1 B.C.	3101	285.2370	700	3801	58.2280	1400	4501	191.2191
100 A.D.	3201	149.9500	800	3901	282.9410	1500	4601	55.9321
200	3301	14.6630	900	4001	117.6540	1600	4701	280.6451
300	3401	239.3760	1000	4101	12.3670	1700	4801	145.3581
400	3501	104.0890	1100	4201	237.0800	1800	4901	10.0711
500	3601	328.8020	1200	4301	101.7931	1900	5001	234.7841
600	3701	193.5150	1300	4401	326.5061	2000	5101	99.4971

Mean place of Rahu for Odd Years.

Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.	Yrs.	Deg.
1	19.3529	18	348.3517	35	317.3504	52	286.3492	69	255.3480	86	224.3468
2	38.7057	19	7.7045	36	336.7033	53	305.7021	70	274.7009	87	243.6997
3	58.0586	20	27.0574	37	356.0562	54	325.0550	71	294.0538	88	263.0525
4	77.4115	21	46.4103	38	15.4091	55	344.4078	72	313.4066	89	282.4054
5	96.7643	22	65.7631	39	34.7619	56	3.7607	73	332.7595	90	301.7583
6	116.1172	23	85.1160	40	54.1148	57	23.1136	74	352.1124	91	321.1112
7	135.4701	24	104.4689	41	73.4677	58	42.4664	75	11.4652	92	340.4640
8	154.8229	25	123.8217	42	92.8205	59	61.8193	76	30.8181	93	359.8169
9	174.1758	26	143.1746	43	112.1734	60	81.1722	77	50.1710	94	19.1698
10	193.5287	27	162.5275	44	131.5263	61	100.5251	78	69.5238	95	38.5226
11	212.8816	28	181.8803	45	150.8791	62	119.8779	79	88.8767	96	57.8755
12	232.2344	29	201.2332	46	170.2320	63	139.2308	80	108.2296	97	77.2284
13	251.5873	30	220.5861	47	189.5849	64	158.5837	81	127.5825	98	96.5812
14	270.9402	31	239.9390	48	208.9377	65	177.9365	82	146.9353	99	115.9341
15	290.2930	32	259.2918	49	228.2906	66	197.2894	83	166.2882	...	...
16	309.6459	33	278.6447	50	247.6435	67	216.6423	84	185.6411	...	...
17	328.9988	34	297.9976	51	266.9964	68	235.9951	85	204.9939	...	...

Mean place of Rahu at Ujjain Sunrise on 0 day of each Solar Year.

A.D. 1840 to A.D. 1920.

A.D.	Deg.	A.D.	Deg.	A.D.	Deg.	A.D.	Deg.	A.D.	Deg.	A.D.	Deg.
1840	315.9563	1854	45.0161	1868	134.0759	1882	223.1357	1896	312.1956	1910	41.2555
1841	296.6034	1855	25.6632	1869	114.7231	1883	203.7829	1897	292.8427	1911	21.9021
1842	277.2505	1856	6.3104	1870	95.3702	1884	184.4300	1898	273.4898	1912	2.5491
1843	257.8977	1857	346.9575	1871	76.0173	1885	165.0771	1899	254.1870	1913	343.1961
1844	238.5448	1858	327.6046	1872	56.6644	1886	145.7243	1900	234.7841	1914	323.8431
1845	219.1919	1859	308.2518	1873	37.3116	1887	126.3714	1901	215.4312	1915	304.4911
1846	199.8391	1860	288.8989	1874	17.9587	1888	107.0185	1902	196.0783	1916	285.1381
1847	180.4862	1861	269.5460	1875	358.6058	1889	87.6657	1903	176.7255	1917	265.7851
1848	161.1333	1862	250.1931	1876	339.2530	1890	68.3128	1904	157.3726	1918	246.4321
1849	141.7805	1863	230.8403	1877	319.9001	1891	48.9599	1905	138.0197	1919	227.0791
1850	122.4276	1864	211.4874	1878	300.5472	1892	29.6070	1906	118.6669	...	...
1851	103.0747	1865	192.1345	1879	281.1944	1893	10.2542	1907	99.3140	...	...
1852	83.7218	1866	172.7817	1880	261.8415	1894	350.9013	1908	79.9611	...	...
1853	64.3690	1867	153.4288	1881	242.4886	1895	331.5484	1909	60.6083	...	...

Mean place of Rahu for every 10 days and for fractions of a Day.

Day.	Deg.	Days.	Deg.	Days.	Deg.	Days.	Deg.	Days.	Deg.	Days.	Deg.
1	0053	1	0530	10	5298	100	5.2984	190	10.0669	280	14.8355
2	0106	2	1060	20	1.0597	110	5.8282	200	10.5968	290	15.3655
3	0159	3	1589	30	1.5895	120	6.3581	210	11.1266	300	15.8955
4	0212	4	2119	40	2.6194	130	6.8879	220	11.6565	310	16.4255
5	0265	5	2649	50	2.6492	140	7.4177	230	12.1863	320	16.9554
6	0318	6	3179	60	3.1790	150	7.9476	240	12.7162	330	17.4854
7	0371	7	3709	70	3.7089	160	8.4774	250	13.2460	340	18.0154
8	0424	8	4239	80	4.2387	170	9.0073	260	13.7758	350	18.5454
9	0477	9	4768	90	4.7686	180	9.5371	270	14.3057	360	19.0754

TABLE XVII—C.

Decimal parts of ☉'s L.
for one day.

Day.	Degree.	Day.	Degree.
01	0099	51	5027
02	0197	52	5125
03	0296	53	5224
04	0394	54	5322
05	0493	55	5421
06	0591	56	5519
07	0690	57	5618
08	0788	58	5716
09	0887	59	5815
10	0986	60	5914
11	1084	61	6012
12	1183	62	6111
13	1281	63	6209
14	1380	64	6308
15	1478	65	6406
16	1577	66	6505
17	1675	67	6603
18	1774	68	6702
19	1873	69	6801
20	1971	70	6899
21	2070	71	6998
22	2168	72	7096
23	2267	73	7195
24	2365	74	7293
25	2464	75	7392
26	2563	76	7491
27	2661	77	7589
28	2760	78	7688
29	2858	79	7786
30	2957	80	7885
31	3055	81	7983
32	3154	82	8082
33	3252	83	8180
34	3351	84	8279
35	3450	85	8378
36	3548	86	8476
37	3647	87	8575
38	3745	88	8673
39	3844	89	8772
40	3942	90	8870
41	4041	91	8969
42	4139	92	9067
43	4238	93	9166
44	4337	94	9265
45	4435	95	9363
46	4534	96	9462
47	4632	97	9560
48	4731	98	9659
49	4829	99	9757
50	4928	100	9856

TABLE XVII—D.

Decimal parts of increase of
☾'s L. for one nakshatra.

Degrees.	Degrees.
01	1333
02	2666
03	4000
04	5333
05	6666
06	8000
07	9333
08	10666
09	12000
10	13333
11	14666
12	16000
13	17333
14	18666
15	20000
16	21333
17	22666
18	24000
19	25333
20	26666
21	28000
22	29333
23	30666
24	32000
25	33333
26	34666
27	36000
28	37333
29	38666
30	40000
31	41333
32	42666
33	44000
34	45333
35	46666
36	48000
37	49333
38	50666
39	52000
40	53333
41	54666
42	56000
43	57333
44	58666
45	60000
46	61333
47	62666
48	64000
49	65333
50	66666

TABLE XVII—E.

Eqn. in minutes of a degree for ascertaining
the latitude of a planet.

Degree.	Mar.	Mer.	Jup.	Ven.	Sat.	Degree.
000	5682	4708	4107	5940	3811	36000
375	5678	4706	4107	5936	3810	35625
750	5667	4699	4104	5925	3800	35250
1125	5651	4688	4099	5909	3806	34875
1500	5629	4674	4092	5886	3801	34500
1875	5601	4656	4083	5857	3795	34125
2250	5567	4634	4071	5822	3788	33750
2625	5528	4608	4056	5781	3779	33375
3000	5484	4578	4040	5734	3769	33000
3375	5431	4545	4021	5681	3758	32625
3750	5379	4507	3999	5622	3745	32250
4125	5318	4467	3976	5558	3731	31875
4500	5252	4423	3951	5487	3716	31500
4875	5181	4375	3922	5412	3699	31125
5250	5104	4324	3892	5331	3682	30750
5625	5023	4270	3860	5244	3663	30375
6000	4937	4213	3827	5152	3643	30000
6375	4846	4153	3791	5055	3623	29625
6750	4751	4090	3754	4953	3601	29250
7125	4651	4025	3716	4846	3579	28875
7500	4547	3957	3676	4731	3556	28500
7875	4429	3886	3635	4617	3534	28125
8250	4327	3813	3593	4496	3509	27750
8625	4210	3738	3550	4371	3484	27375
9000	4090	3662	3506	4241	3459	27000
9375	3966	3584	3461	4107	3431	26625
9750	3839	3504	3417	3970	3400	26250
10125	3708	3423	3372	3828	3381	25875
10500	3575	3341	3326	3684	3359	25500
10875	3410	3259	3282	3536	3335	25125
11250	3303	3177	3238	3385	3313	24750
11625	3162	3095	3195	3231	3289	24375
12000	3019	3012	3152	3075	3265	24000
12375	2875	2930	3110	2916	3242	23625
12750	2730	2851	3070	2756	3221	23250
13125	2585	2773	3032	2594	3200	22875
13500	2440	2697	2995	2432	3181	22500
13875	2295	2624	2961	2269	3162	22125
14250	2152	2554	2928	2106	3146	21750
14625	2011	2487	2898	1945	3131	21375
15000	1874	2426	2871	1786	3117	21000
15375	1743	2370	2847	1630	3104	20625
15750	1618	2319	2825	1481	3092	20250
16125	1503	2275	2807	1341	3083	19875
16500	1402	2238	2793	1213	3077	19500
16875	1317	2208	2782	1101	3072	19125
17250	1251	2186	2774	1013	3068	18750
17625	1209	2173	2770	956	3066	18375
18000	1194	2168	2769	936	3065	18000

In applying the above equations the following data, giving the inclination of the moon's orbit to the ecliptic and the greatest apparent latitude of the other planets have to be remembered:—

Inclination of ☾'s orbit 4° 30', Sine 270'
Greatest latitude Mars 1° 30' " 90'
" " Mercury 2° 0' " 120'
" " Jupiter 1° 16' " 78'
" " Venus 2° 16' " 138'
" " Saturn 2° 10' " 132'

TABLE XVII—F.

Table of Hindu Sines.

Degree.	Sine.	Degree.	Diff.
+		—	+
000	000	18000	...
375	225	18375	225
750	449	18750	224
1125	671	19125	222
1500	890	19500	219
1875	1105	19875	215
2250	1315	20250	210
2625	1520	20625	205
3000	1719	21000	199
3375	1910	21375	191
3750	2093	21750	183
4125	2267	22125	174
4500	2431	22500	164
4875	2585	22875	154
5250	2728	23250	143
5625	2859	23625	131
6000	2978	24000	119
6375	3084	24375	106
6750	3177	24750	93
7125	3256	25125	79
7500	3321	25500	65
7875	3372	25875	51
8250	3409	26250	37
8625	3431	26625	22
9000	3438	27000	7
9375	3431	27375	7
9750	3409	27750	22
10125	3372	28125	37
10500	3321	28500	51
10875	3256	28875	65
11250	3177	29250	79
11625	3084	29625	93
12000	2978	30000	106
12375	2859	30375	119
12750	2728	30750	131
13125	2585	31125	143
13500	2431	31500	154
13875	2267	31875	164
14250	2093	32250	174
14625	1910	32625	183
15000	1719	33000	191
15375	1520	33375	199
15750	1315	33750	205
16125	1105	34125	210
16500	890	34500	215
16875	671	34875	219
17250	449	35250	222
17625	225	35625	224
18000	000	36000	225

TABLE XVII—G.

Decimal parts of 3.75 degrees [Example 3.2° = 853 of 3.75°].

0.1	026666	0.6	160000	1.1	293333	1.6	426666	2.1	560000	2.6	693333	3.1	826666	3.6	960000
0.2	053333	0.7	186666	1.2	320000	1.7	453333	2.2	586666	2.7	720000	3.2	853333	3.7	986666
0.3	080000	0.8	213333	1.3	346666	1.8	480000	2.3	613333	2.8	746666	3.3	880000		
0.4	106666	0.9	240000	1.4	373333	1.9	506666	2.4	640000	2.9	773333	3.4	906666		
0.5	133333	1.0	266666	1.5	400000	2.0	533333	2.5	666666	3.0	800000	3.5	933333		

Geocentric (Indian) Longitudes of Sun and Major planets at Ujja

Day of S. Yr.	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
☉'s Mean L.	357.0	6.9	16.7	26.6	36.4	46.3	56.1	66.0	75.9	85.7	95.6	105.4	115.3	125.1	135.0	144.8	154.7	164.6
Corrn. for do.	+2.1	+2.0	+1.9	+1.7	+1.4	+1.1	+0.8	+0.4	+0.0	-0.3	-0.7	-1.1	-1.4	-1.6	-1.9	-2.0	-2.1	-2.1
English date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Je 20	Je 30	Jul 10	Jul 20	Jul 30	Aug 9	Aug 19	Aug 29	S 8	S 18	S 28
Tamil month.	Chit	Chit	Chit	Chit	Vaik	Vaik	Vaik	Ani	Ani	Ani	Adi	Adi	Adi	Avan	Avan	Avan	Pur	Pur
Do. date.	1	11	21	31	10	20	30	9	19	29	7	17	27	6	16	26	5	15
1840 Mars ...	5.0	12.6	20.0	27.2	34.5	41.7	48.8	55.7	62.5	69.4	76.1	82.9	89.3	95.8	102.3	108.6	114.9	121.2
☉'s L. Merc. ...	0.0	352.6	353.4	3.2	18.4	36.1	55.0	73.8	92.0	108.5	121.1	126.7	122.4	115.9	115.5	128.6	143.3	160.0
+8 Jup. ...	204.8	203.5	202.2	200.9	199.8	198.5	197.7	197.0	196.7	196.3	196.4	197.4	198.3	199.5	200.9	202.5	204.3	206.1
Ven. ...	332.1	344.4	356.4	8.8	21.0	33.2	45.5	57.7	69.6	82.3	94.5	106.8	119.0	131.3	143.1	155.9	168.4	180.8
Sat. ...	239.1	238.6	238.1	237.7	237.0	236.3	235.5	234.8	234.1	233.4	233.0	232.6	232.3	232.4	232.4	232.5	233.1	233.7
1841 Mars ...	187.5	183.9	180.7	177.8	176.8	177.1	178.4	181.0	184.1	188.0	192.6	197.6	203.0	208.8	214.7	221.1	227.6	234.1
☉'s L. Merc. ...	333.8	343.0	357.2	14.7	33.5	52.6	70.8	85.9	101.0	108.3	105.4	98.2	99.3	109.2	123.8	140.6	158.4	177.2
+5 Jup. ...	238.2	237.8	237.0	236.1	235.1	233.8	232.6	231.2	230.0	228.9	228.3	227.7	227.7	228.0	228.6	229.3	230.4	231.5
Ven. ...	39.1	41.9	41.5	36.9	30.9	26.1	23.8	27.7	33.5	41.1	49.9	59.4	69.7	80.5	91.5	102.8	114.5	126.6
Sat. ...	250.5	250.2	249.9	249.5	248.5	247.5	246.5	246.1	245.7	245.3	245.4	245.5	245.6	244.8	244.0	243.2	243.6	244.1
1842 Mars ...	19.7	26.9	33.9	41.0	47.9	55.0	61.8	68.4	75.3	81.9	88.6	95.0	101.5	107.5	114.3	120.9	127.0	133.1
☉'s L. Merc. ...	335.0	351.8	10.8	29.1	47.9	65.4	79.9	88.8	88.2	80.8	79.8	88.1	102.0	118.6	136.7	154.5	171.7	188.4
+3 Jup. ...	269.6	270.3	270.5	270.7	270.5	269.8	268.9	267.7	266.5	265.2	263.9	262.7	261.7	260.9	260.4	260.2	260.2	260.0
Ven. ...	8.6	21.0	33.3	45.5	57.7	70.1	82.0	94.1	105.9	117.9	129.7	141.7	153.4	164.8	176.7	187.6	198.7	209.8
Sat. ...	261.3	260.9	260.5	260.0	259.8	259.6	259.4	258.7	258.0	257.3	256.6	255.9	255.1	254.8	254.5	254.2	254.5	254.8
1843 Mars ...	237.0	239.1	240.3	240.3	239.3	237.3	234.4	231.5	229.4	228.4	228.5	230.3	233.0	236.7	241.1	246.6	251.5	256.4
☉'s L. Merc. ...	347.0	6.7	24.5	42.3	57.7	68.2	70.4	63.2	60.1	67.0	80.0	96.3	114.4	132.6	150.3	166.8	179.7	189.0
+0 Jup. ...	298.9	300.6	302.0	303.1	304.2	304.7	305.2	305.3	304.8	304.2	302.9	301.4	300.7	299.3	298.0	296.9	295.9	294.8
Ven. ...	315.9	327.5	339.4	351.3	3.3	15.2	27.0	39.0	51.1	63.3	75.4	87.3	99.4	111.8	124.0	136.4	148.8	161.1
Sat. ...	272.2	272.3	272.4	272.5	272.1	271.7	271.3	270.6	269.9	269.2	268.5	267.8	267.0	266.5	266.0	265.5	265.5	265.2
1844 Mars ...	34.7	41.5	48.3	55.0	61.8	68.4	75.0	81.5	88.1	94.6	100.0	107.5	113.9	120.3	126.6	132.9	139.4	145.7
☉'s L. Merc. ...	3.1	21.0	36.8	48.3	51.3	45.0	40.8	46.4	59.0	75.4	93.5	112.1	130.2	147.0	161.2	169.7	169.3	161.1
+7 Jup. ...	327.3	329.5	331.5	333.6	335.4	337.1	338.6	339.7	340.5	341.0	341.2	341.1	340.5	339.6	338.5	337.4	336.1	334.8
Ven. ...	42.4	53.4	64.1	74.6	83.9	93.0	100.1	105.7	108.3	107.1	102.1	95.1	91.5	91.4	94.5	100.5	108.4	117.2
Sat. ...	283.1	283.4	283.7	284.0	283.8	283.6	283.3	282.7	282.0	281.4	280.6	279.9	279.1	278.5	277.9	277.2	277.0	276.5
1845 Mars ...	267.9	273.6	279.4	284.6	289.8	294.5	298.8	302.5	305.1	307.3	307.7	306.4	304.7	301.9	299.4	298.2	297.8	297.2
☉'s L. Merc. ...	14.4	25.6	32.5	27.6	21.5	25.2	36.8	52.7	70.6	89.4	107.9	125.4	140.7	151.3	153.6	146.8	142.5	141.1
+5 Jup. ...	354.9	357.3	359.7	2.1	4.5	6.5	8.2	10.6	12.4	14.0	15.4	16.5	17.3	17.6	17.7	17.4	16.8	16.1
Ven. ...	350.2	2.7	15.0	27.5	39.7	51.9	64.2	76.8	88.6	100.7	113.3	125.4	137.5	149.5	161.8	174.0	186.1	198.1
Sat. ...	293.8	294.4	294.9	295.4	295.4	295.4	295.4	294.8	294.3	293.8	293.0	292.3	291.6	290.8	290.1	289.4	289.1	288.6
1846 Mars ...	49.0	55.4	61.8	68.2	74.5	80.9	87.3	93.5	100.0	106.4	112.7	118.9	125.4	131.7	138.1	144.4	150.9	157.2
☉'s L. Merc. ...	12.9	10.3	3.1	4.4	14.4	29.5	47.4	66.5	85.0	103.0	119.3	131.6	136.9	132.0	125.7	123.3	139.0	155.1
+2 Jup. ...	22.5	24.8	27.1	29.5	31.9	34.3	36.7	39.0	41.1	43.4	45.4	47.2	48.9	51.0	51.6	52.6	53.3	53.8
Ven. ...	317.7	324.6	332.8	341.9	352.0	2.6	13.2	24.4	35.7	47.4	59.1	70.7	82.5	94.4	106.4	118.8	130.9	142.8
Sat. ...	304.6	305.4	306.2	306.9	307.2	307.4	307.6	307.3	307.0	306.7	306.0	305.3	304.6	303.8	303.0	302.2	301.6	301.0
1847 Mars ...	289.5	296.7	303.8	310.3	317.8	324.9	331.6	338.2	344.8	351.0	356.7	2.1	8.1	12.5	16.0	18.4	19.8	20.2
☉'s L. Merc. ...	345.6	344.3	352.6	6.9	24.2	42.9	61.8	79.3	97.3	111.1	118.5	116.2	108.9	109.3	118.5	132.6	149.2	166.0
+0 Jup. ...	50.3	52.2	54.3	56.5	58.7	60.0	63.3	65.7	67.9	70.2	72.5	73.9	76.9	79.0	80.9	82.7	84.1	84.8
Ven. ...	26.8	38.9	50.8	62.8	74.6	86.2	97.6	108.9	120.0	130.6	140.9	150.3	159.2	166.7	172.5	175.5	175.4	174.1
Sat. ...	315.7	316.6	317.5	318.4	318.9	319.4	319.8	319.7	319.6	319.5	319.0	318.5	317.9	317.1	316.3	315.6	314.8	313.9
1848 Mars ...	64.4	70.2	76.1	82.1	88.0	94.2	100.3	106.4	112.9	118.9	124.9	131.3	137.6	144.0	150.4	156.8	163.2	169.5
☉'s L. Merc. ...	332.5	345.7	2.7	21.4	40.2	58.2	76.5	91.0	99.4	99.1	91.4	90.3	98.7	112.6	129.4	147.0	164.9	182.8
+7 Jup. ...	79.1	80.3	81.7	83.4	85.2	87.2	89.3	91.5	93.6	95.9	98.1	100.5	102.8	105.0	107.2	109.3	111.3	113.1
Ven. ...	332.6	344.9	357.1	9.4	21.5	33.7	45.9	58.2	70.5	82.8	94.9	106.9	119.5	131.8	144.2	156.4	168.9	181.2
Sat. ...	326.9	327.9	328.9	330.0	330.8	331.5	332.2	332.0	331.8	331.5	331.4	331.4	331.4	330.7	330.0	329.2	328.4	327.5
1849 Mars ...	308.9	316.4	324.1	331.7	339.3	346.8	354.0	1.4	9.4	15.5	22.3	29.0	35.5	41.5	47.4	52.9	58.1	63.1
☉'s L. Merc. ...	341.5	358.1	16.9	35.7	53.4	68.9	79.6	81.1	74.0	71.1	77.9	90.7	107.2	125.0	143.2	160.6	176.7	192.2
+4 Jup. ...	109.4	109.7	110.3	111.2	112.2	113.5	115.1	116.9	118.6	120.7	122.8	124.9	127.0	129.3	131.5	133.8	135.9	137.8
Ven. ...	37.4	40.2	38.4	33.5	26.2	23.6	23.3	26.8	32.8	40.8	49.7	59						

mean Sunrise for every ten days from A.D. 1840 to A.D. 1849.

180	190	200	210	220	230	240	250	260		270	280	290	300	310	320	330	340	350	360
174.4 -2.2 O 8 Pur 25	184.3 -2.1 O 18 Aipp 4	194.1 -1.9 O 28 Aipp 14	204.0 -1.7 N 7 Aipp 24	213.8 -1.5 N 17 Kart 4	223.7 -1.2 N 27 Kart 14	233.5 -0.9 D 7 Kart 24	243.4 -0.5 D 17 Marg 5	253.3 -0.1 D 27 Marg 15		263.1 +0.3 Ja 6 Marg 25	273.0 +0.6 Ja 16 Tai 5	282.8 +1.0 Ja 26 Tai 15	292.7 +1.3 F 5 Tai 25	302.5 +1.6 F 15 Masi 6	312.4 +1.8 F 25 Masi 16	322.2 +2.0 Mr 6,7 Masi 26	332.1 +2.1 16,17 Pang 6	342.0 +2.2 26,27 Pang 16	351.8 +2.2 Ap 5,6 Pang 26
127.0 177.9 208.0 193.1 234.2	133.2 195.4 210.2 205.7 235.1	139.0 211.6 212.3 217.9 236.0	144.9 225.3 215.3 230.4 237.0	150.4 233.7 216.8 242.7 238.1	156.0 233.1 218.9 255.1 239.2	161.5 225.4 221.2 267.4 240.4	166.8 223.1 223.4 279.5 241.7	171.8 229.9 225.6 292.0 243.0	41	176.6 242.9 227.7 303.9 244.2	180.8 259.0 229.6 315.6 245.3	184.8 276.4 231.4 327.5 246.4	188.3 294.4 233.2 339.2 247.5	191.1 311.4 234.7 350.3 248.4	193.1 327.3 236.0 0.9 249.3	193.8 339.4 237.1 11.1 250.1	193.9 344.3 237.8 20.6 250.4	192.0 339.3 238.3 29.3 250.7	189.0 334.2 238.4 35.8 251.1
241.2 192.8 233.3 138.4 244.4	248.3 207.3 235.2 150.1 245.3	255.7 216.8 237.1 162.3 246.2	262.9 218.4 239.1 174.6 247.0	270.4 210.8 241.2 187.0 248.1	277.8 207.1 243.4 199.3 249.2	285.2 211.2 245.7 211.7 250.2	293.0 224.2 248.0 224.1 251.4	300.6 239.7 250.2 236.7 252.6	42	308.5 256.9 252.5 249.3 253.7	316.0 274.6 254.8 262.0 254.8	323.6 291.8 257.0 274.7 255.9	331.2 307.6 259.3 287.1 257.1	338.8 320.3 261.3 299.8 258.0	346.5 325.6 263.1 312.3 258.9	354.0 322.1 265.0 324.9 259.7	1.3 315.3 266.5 337.5 260.3	8.9 317.3 268.1 349.8 260.9	16.0 327.8 269.3 2.2 261.4
140.4 198.9 261.7 219.5 255.0	145.7 203.3 262.8 229.2 255.7	151.8 197.8 264.3 237.5 256.4	157.8 191.5 265.8 244.8 257.0	163.8 194.0 267.4 250.0 258.0	169.9 204.7 269.3 251.8 259.0	175.7 219.1 271.5 250.1 260.1	181.7 235.7 273.6 244.1 261.2	187.5 253.3 275.9 240.9 262.3	43	193.2 270.7 278.2 236.6 263.5	198.8 287.0 280.4 237.7 264.7	204.3 300.3 282.8 242.6 265.9	209.7 308.2 285.2 249.6 267.0	214.8 306.6 287.5 257.6 268.0	219.7 298.9 292.0 266.2 269.0	224.3 298.0 294.2 277.2 270.1	228.6 306.8 294.2 288.0 270.8	232.5 320.9 296.2 299.0 271.5	235.7 338.0 298.1 310.2 272.1
263.6 184.5 294.7 174.3 265.5	270.2 176.7 294.8 186.2 266.1	277.7 176.4 295.2 198.9 266.7	283.6 185.0 295.8 211.2 267.2	290.5 198.9 296.7 223.6 268.1	297.6 215.0 297.9 236.2 269.0	304.9 232.1 299.5 248.7 269.9	312.0 249.4 301.3 261.6 270.9	319.3 266.4 303.1 274.2 272.0	44	326.6 280.3 305.1 286.6 273.1	333.9 290.1 307.3 299.2 274.4	341.2 291.1 309.5 311.5 275.6	348.2 283.7 311.8 323.9 276.9	355.5 280.3 314.1 336.0 277.9	2.5 286.4 316.5 348.5 279.0	9.6 299.1 318.9 0.3 280.2	16.6 315.6 321.4 12.2 281.0	23.6 333.6 323.8 24.1 281.8	30.6 352.6 326.1 35.6 282.7
152.1 159.5 333.5 127.2 276.7	158.3 166.8 332.3 137.7 277.0	164.5 179.9 331.5 148.7 277.4	170.9 195.7 330.9 159.8 277.7	177.4 213.0 330.7 171.6 278.5	183.6 230.2 330.9 183.4 279.4	189.9 246.6 331.4 195.1 280.2	196.1 261.4 332.2 207.5 281.3	202.5 272.2 333.3 219.8 282.3	45	208.8 275.2 334.7 232.0 283.4	215.1 268.6 336.2 244.3 284.7	221.4 263.7 338.1 256.7 285.9	227.8 267.9 339.9 269.3 287.1	234.0 279.6 342.2 281.8 288.3	240.2 295.3 344.4 294.4 289.5	246.5 312.9 346.7 306.8 290.6	252.8 331.2 349.0 319.1 291.5	258.8 349.4 351.4 331.6 292.4	264.8 6.3 353.8 344.0 293.4
301.4 159.3 14.1 210.3 288.3	304.8 171.9 13.4 222.1 288.5	308.9 192.0 12.2 233.9 288.7	313.4 209.3 10.9 245.7 288.8	318.7 226.3 10.0 257.4 289.4	324.1 241.8 9.6 268.9 290.0	330.0 253.9 8.4 279.9 290.7	335.9 259.4 7.5 290.6 291.7	341.9 255.3 7.4 300.5 292.7	46	348.1 247.9 7.4 310.0 293.8	354.4 249.5 7.9 317.9 294.9	0.6 259.4 8.8 324.3 296.6	7.1 273.8 10.1 328.1 297.3	13.6 290.8 11.5 328.2 298.5	20.0 308.8 13.2 324.1 299.7	26.5 326.9 15.1 317.9 300.9	32.9 344.4 17.1 313.1 302.0	39.4 359.6 19.1 312.5 303.0	45.7 10.4 21.3 315.4 304.0
163.7 170.7 53.7 155.5 300.5	170.2 188.3 53.1 167.8 300.4	176.5 205.5 52.0 180.2 300.3	183.3 221.6 51.2 192.7 300.3	189.7 235.1 50.2 205.2 300.7	196.4 242.7 48.8 217.8 301.2	203.1 241.6 47.5 230.4 301.7	209.7 234.2 46.3 243.0 302.6	216.3 231.9 45.1 255.8 303.5	47	223.1 239.8 44.0 268.7 304.5	230.0 253.1 43.4 281.0 305.6	236.9 266.8 43.0 293.5 306.7	243.6 284.3 43.0 306.3 307.8	250.7 302.1 43.4 318.7 309.1	257.6 319.9 44.0 331.2 310.4	264.6 336.3 45.0 343.9 311.7	271.8 350.0 46.2 356.2 312.9	278.8 357.5 47.1 8.5 314.0	286.0 349.1 49.4 20.7 315.2
18.6 184.6 86.5 164.7 313.4	16.6 201.2 87.2 160.2 313.1	13.8 215.7 87.5 159.6 312.8	11.1 225.7 87.6 163.1 312.5	9.4 227.2 87.5 168.8 312.7	8.9 220.5 86.9 176.8 313.0	9.5 215.8 86.0 185.9 313.3	11.3 221.1 84.8 195.6 314.0	13.7 232.6 83.6 206.3 314.7	48	16.9 248.0 82.3 217.4 315.5	20.6 265.4 81.0 228.9 316.6	24.9 283.0 79.8 240.4 317.7	29.5 300.7 79.1 252.5 318.8	34.5 316.6 77.9 264.5 320.0	39.5 329.6 77.4 276.5 321.2	45.1 336.2 77.2 288.7 322.5	50.5 332.9 77.3 300.8 323.5	56.0 325.9 77.7 313.0 324.5	61.9 327.3 78.6 325.3 325.6
176.4 197.1 114.9 193.8 326.8	182.9 208.5 116.5 206.2 326.2	189.7 212.0 117.0 218.6 325.7	196.5 206.6 118.2 230.9 325.2	203.3 200.2 119.6 243.2 325.2	210.1 203.3 120.0 255.6 325.3	216.9 214.1 120.1 267.7 325.3	223.9 229.0 119.8 280.2 325.6	231.1 245.8 119.3 292.2 325.9	49	238.1 263.3 118.5 304.2 326.2	245.1 280.7 117.5 316.2 327.5	252.6 297.1 116.2 328.0 328.8	259.9 310.4 114.9 339.3 330.1	267.3 318.1 113.6 350.2 331.3	274.8 316.5 112.5 1.0 332.5	282.3 308.8 111.3 11.0 333.7	289.9 308.9 110.5 18.9 335.0	297.4 318.1 109.8 25.6 336.3	305.1 332.3 109.5 34.1 337.6
66.7 196.1 140.2 138.7 340.9	70.2 193.3 142.1 150.8 340.2	72.6 185.7 144.0 162.8 339.5	74.0 185.9 145.7 175.0 338.9	74.4 194.7 147.3 187.5 338.6	73.4 208.4 148.5 199.8 338.3	71.4 224.7 149.6 212.2 338.1	67.8 242.2 150.3 224.8 338.4	64.1 259.5 150.8 237.4 338.8	50	61.1 276.0 151.0 249.8 339.2	58.9 290.3 150.9 262.5 340.0	58.2 299.8 150.4 275.0 340.8	58.5 300.7 149.4 287.8 341.6	60.0 293.2 148.6 300.3 342.7	62.4 290.0 147.3 313.0 343.9	65.4 296.5 146.0 325.4 345.1	69.3 309.7 144.7 338.0 346.4	73.5 326.3 143.5 350.5 347.7	77.9 344.4 142.4 2.9 349.0

Mag. P. Phal. U. Phal. Hasta. Chit. Svati. Visa. Anur. Jyesh. Mula. P. Ash. U. Ash. Srav. Dan. Satab. P. Bhad. U. Bhad. Revati.
133.3 146.7 160.0 173.3 186.7 200.0 213.3 226.7 240.0 253.3 266.7 280.0 293.3 306.7 320.0 333.3 346.7 360.0

Geocentric (Indian) Longitudes of Sun and Major planets at Ujjain

Day of S. Yr.	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
☉'s Mean L.	357.0	6.9	16.7	26.6	36.4	46.3	56.1	66.0	75.9	85.7	95.6	105.4	115.3	125.1	135.0	144.8	154.7	164.6
Corrn. for do.	+2.1	+2.0	+1.9	+1.7	+1.4	+1.1	+0.8	+0.4	+0.0	-0.3	-0.7	-1.1	-1.4	-1.6	-1.9	-2.0	-2.1	-2.2
English date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Je 20	Je 30	Jl 10	Jl 20	Jl 30	Aug 9	Aug 19	Aug 29	S 8	S 18	S 28
Tamil month.	Chit	Chit	Chit	Chit	Vaik	Vaik	Vaik	Ani	Ani	Ani	Adi	Adi	Adi	Avan	Avan	Avan	Pur	Pur
Do. Date.	1	11	21	31	10	20	30	9	19	29	7	17	27	6	16	26	5	15
1850 Mars ...	80.3	85.5	90.8	96.1	101.6	107.5	113.2	118.9	125.0	130.7	137.2	143.4	149.7	156.2	162.4	168.9	175.6	182.4
☉'s L. Merc. ...	353.8	12.0	30.5	46.7	58.5	62.8	58.6	51.8	56.4	68.7	84.9	102.7	121.1	139.0	155.9	170.0	179.0	179.0
+2 Jup. ...	141.8	140.9	140.5	140.3	140.4	140.8	141.8	142.7	144.0	145.5	147.1	149.1	151.1	153.1	155.2	157.4	159.6	161.8
Ven. ...	9.1	21.5	33.7	46.0	58.4	70.6	82.4	94.6	106.4	118.4	130.4	141.9	153.6	165.3	176.9	187.9	198.8	209.7
Sat. ...	349.7	351.0	352.3	353.5	354.5	355.5	356.6	357.3	358.0	358.7	358.8	358.9	359.1	358.6	358.1	357.7	357.0	356.1
1851 Mars ...	326.1	333.9	341.6	349.3	356.9	4.3	12.0	19.6	26.4	33.6	40.1	47.3	54.1	60.7	66.9	73.2	79.1	84.7
☉'s L. Merc. ...	8.1	24.0	37.0	43.4	39.2	32.9	34.6	46.6	62.1	79.8	98.6	116.8	134.4	149.6	160.6	163.5	156.9	152.0
-1 Jup. ...	175.3	175.1	175.0	174.8	174.7	174.9	175.2	175.7	176.3	176.9	177.8	178.8	179.9	181.3	182.6	184.0	185.5	187.0
Ven. ...	316.2	328.1	339.9	351.8	3.6	15.8	27.5	39.5	51.6	63.8	75.9	88.0	100.1	112.3	124.5	136.9	149.3	161.4
Sat. ...	1.4	2.7	4.0	5.3	6.6	7.9	9.1	10.0	10.8	11.6	12.1	12.5	12.9	12.7	12.4	12.1	11.6	11.0
1852 Mars ...	100.3	103.9	108.0	112.5	117.2	122.2	127.5	133.2	138.9	144.8	150.7	156.8	163.0	169.4	175.9	182.4	189.1	195.8
☉'s L. Merc. ...	16.8	23.9	21.1	15.1	15.3	25.7	40.9	58.7	77.3	96.1	113.9	129.9	142.1	146.8	141.5	135.5	138.3	149.2
+7 Jup. ...	209.6	208.5	207.2	205.9	204.6	203.5	202.4	201.5	201.0	200.8	200.9	201.3	202.0	203.2	204.6	206.0	207.6	209.3
Ven. ...	42.8	54.0	64.5	74.6	83.9	92.4	99.3	104.4	106.4	104.2	98.3	92.0	89.0	89.4	93.3	99.7	108.0	117.0
Sat. ...	13.7	15.0	16.3	17.6	18.9	20.2	21.6	22.6	23.6	24.6	25.3	26.0	26.7	26.8	26.9	27.0	26.6	26.1
1853 Mars ...	342.9	350.7	358.5	6.1	13.6	21.1	28.3	35.6	42.7	49.8	56.6	63.3	70.1	76.6	83.0	89.3	95.5	101.6
☉'s L. Merc. ...	3.5	356.2	355.1	3.6	17.9	35.4	54.0	73.1	91.2	108.1	121.8	128.7	126.3	118.9	119.5	128.6	142.9	159.5
+4 Jup. ...	242.8	242.4	241.9	241.1	240.1	238.8	237.5	237.0	235.4	233.9	233.1	232.4	232.2	232.1	232.5	233.4	234.2	235.4
Ven. ...	350.7	3.1	15.5	28.0	40.2	52.6	64.7	77.1	89.1	101.4	113.6	125.9	138.0	150.2	162.4	174.3	186.4	198.4
Sat. ...	26.4	27.5	28.6	29.8	31.1	32.5	33.9	35.1	36.3	37.5	38.5	39.4	40.3	40.7	41.1	41.4	41.2	41.0
1854 Mars ...	126.8	127.4	129.6	132.1	135.4	139.5	144.0	148.9	154.0	159.5	165.2	171.1	177.3	183.6	190.0	196.6	203.3	210.1
☉'s L. Merc. ...	335.6	342.3	355.3	12.0	30.6	49.6	68.2	85.8	100.5	109.8	109.8	102.3	109.5	108.1	121.6	137.9	155.4	173.3
+1 Jup. ...	273.7	274.4	275.1	275.6	275.6	275.2	274.5	273.5	272.3	271.0	269.7	268.5	267.2	266.3	265.7	265.1	265.0	265.4
Ven. ...	316.8	323.9	332.3	341.8	351.9	2.7	13.5	24.7	36.0	47.8	59.5	71.2	83.2	94.9	107.1	119.3	131.4	143.7
Sat. ...	38.5	39.8	41.1	42.3	43.7	45.1	46.5	47.8	49.1	50.5	51.5	52.6	53.6	54.3	55.0	55.7	55.8	55.9
1855 Mars ...	358.4	6.1	13.4	20.9	28.2	35.5	42.5	49.5	56.6	63.6	70.4	77.0	83.7	90.1	96.6	102.8	109.3	115.3
☉'s L. Merc. ...	332.9	349.1	7.2	26.2	45.2	63.0	78.8	89.5	92.4	85.6	81.7	87.4	100.1	116.0	133.9	151.7	169.2	185.4
-1 Jup. ...	302.7	304.4	306.1	307.5	308.7	309.4	310.1	310.2	310.0	309.6	308.8	307.8	306.5	305.2	303.8	302.5	301.4	300.5
Ven. ...	27.2	39.3	51.3	63.3	74.8	86.5	97.9	109.8	121.3	132.5	141.8	150.2	158.9	166.0	171.0	173.6	172.1	166.7
Sat. ...	51.3	52.4	53.6	54.8	56.1	57.4	58.7	60.0	61.3	62.7	63.9	65.0	66.3	67.3	68.2	69.1	69.4	69.8
1856 Mars ...	166.0	163.3	161.4	160.9	161.5	163.5	166.3	169.5	173.8	178.5	183.6	189.1	194.7	200.8	207.0	213.4	220.1	227.0
☉'s L. Merc. ...	346.2	4.7	23.5	41.7	57.8	69.5	73.8	68.2	62.8	68.7	79.6	95.5	113.4	131.6	149.6	166.0	179.9	188.5
+6 Jup. ...	330.9	333.2	335.2	337.4	339.4	341.1	342.8	344.0	345.0	345.3	345.6	346.4	346.1	345.4	344.5	343.3	342.0	340.8
Ven. ...	333.1	345.4	357.8	10.0	22.2	34.2	46.6	58.9	71.0	83.3	95.5	107.8	120.0	132.3	144.6	156.9	169.4	181.6
Sat. ...	64.4	65.5	66.5	67.5	68.8	70.1	71.3	72.6	73.9	75.2	76.5	77.8	79.2	80.2	81.3	82.2	82.9	83.5
1857 Mars ...	14.0	21.3	28.4	35.7	42.7	49.6	56.7	63.5	70.4	77.0	83.6	90.1	96.5	103.1	109.5	115.9	122.2	128.3
☉'s L. Merc. ...	0.8	18.7	35.0	48.2	54.3	50.4	43.7	46.6	57.6	72.9	90.7	109.3	127.4	144.8	160.0	170.3	172.8	166.0
+4 Jup. ...	358.5	0.9	3.3	5.7	8.0	10.3	12.5	14.6	16.3	18.1	19.7	20.9	21.9	22.5	22.7	22.7	22.3	21.6
Ven. ...	35.7	37.6	35.1	29.0	23.2	20.2	21.5	25.5	32.1	40.3	49.7	59.4	69.9	80.9	92.1	103.6	115.3	127.2
Sat. ...	77.8	78.5	79.2	80.1	81.2	82.4	83.5	84.4	86.1	87.5	88.8	90.1	91.4	92.6	93.7	94.9	95.7	96.6
1858 Mars ...	220.2	219.6	217.9	215.2	211.7	209.0	206.8	206.2	206.4	208.2	210.9	214.3	218.8	223.6	229.0	234.3	240.7	247.2
☉'s L. Merc. ...	12.6	26.6	34.6	32.8	25.4	25.8	35.6	50.5	67.3	86.5	105.0	122.8	139.0	151.2	156.6	151.8	145.2	147.4
+1 Jup. ...	26.1	28.4	30.8	33.2	35.6	38.0	40.3	42.6	44.9	47.2	49.2	51.1	52.9	54.5	55.8	56.9	57.7	58.2
Ven. ...	9.6	22.0	34.2	46.8	58.9	71.1	82.9	95.0	106.9	118.7	130.7	142.4	153.9	165.6	177.0	188.2	198.9	209.3
Sat. ...	91.8	92.3	92.8	93.3	94.4	95.4	96.4	97.6	98.8	100.1	101.4	102.7	104.1	105.4	106.6	107.8	108.8	109.7
Eng. date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Aug 10	Aug 20	Aug 30	S 9	S 19	S 29
1859 Mars ...	29.0	35.8	43.0	49.8	56.6	63.3	70.0	76.6	83.3	89.8	96.4	102.7	109.2	115.6	122.2	128.5	134.3	141.1
☉'s L. Merc. ...	14.6	13.6	6.9	6.1	14.7	29.1	45.9	65.2	83.7	102.2	118.9	132.2	139.0	136.2	128.9	129.4	138.8	153.0
+8 Jup. ...	54.2	56.0	58.1	60.2	62.3	64.6	66.9	69.3	71.7	74.0								

mean Sunrise for every ten days from A.D. 1850 to A.D. 1859.

180	190	200	210	220	230	240	250	260		270	280	290	300	310	320	330	340	350	360
174.4 - 2.2 O 8 Pur 25	184.3 - 2.1 O 18 Aipp 4	194.1 - 1.9 O 28 Aipp 14	204.0 - 1.7 N 7 Aipp 24	213.8 - 1.5 N 17 Kart 4	223.7 - 1.2 N 27 Kari 14	233.5 - 0.9 D 7 Kart 24	243.4 - 0.5 D 17 Marg 5	253.3 - 0.1 D 27 Marg 15		263.1 + 0.3 Ja 6 Mar 25	273.0 + 0.6 Ja 16 Tai 5	282.8 + 1.0 Ja 26 Tai 15	292.7 + 1.3 F 5 Tai 25	302.5 + 1.6 F 15 Masi 6	312.4 + 1.8 F 25 Masi 16	322.2 + 2.0 Mr 6, 7 Masi 26	332.1 + 2.1 16, 17 Pang 6	342.0 + 2.2 26, 27 Pang 16	351.8 + 2.2 Ap 5, 6 Pang 26
188.7 171.2 164.0 219.2 355.5	195.6 168.8 166.2 228.9 354.7	202.5 175.6 168.3 237.0 353.9	209.3 188.3 170.4 243.9 353.1	216.4 204.1 172.3 248.3 352.6	223.4 221.3 174.0 247.7 352.1	230.8 238.4 175.7 246.4 351.7	238.0 255.4 177.3 239.9 351.8	245.3 270.3 178.5 234.9 351.9	51	252.7 281.1 179.6 233.8 351.9	260.3 284.8 180.4 236.0 352.5	267.9 278.5 180.9 241.3 353.1	275.5 273.1 181.1 248.7 353.8	282.9 276.9 180.7 256.5 354.8	290.9 288.4 180.2 266.9 355.9	298.7 303.9 179.5 277.3 357.0	306.6 321.8 178.6 288.1 358.2	314.3 340.3 177.4 299.2 359.5	322.1 358.6 176.1 310.5 0.8
90.3 156.4 189.1 174.2 10.4	95.3 168.0 190.2 186.7 9.6	99.9 183.2 191.7 199.2 8.7	104.2 200.2 193.4 211.7 7.8	107.9 217.6 194.9 224.1 7.2	110.6 234.5 196.5 236.9 6.6	112.9 250.1 198.1 249.4 6.0	113.7 262.4 199.3 262.1 5.8	113.7 268.2 200.6 274.7 5.6	52	112.3 264.7 201.9 287.1 5.4	109.7 257.3 202.9 299.7 5.7	106.4 258.3 204.0 312.0 6.1	102.3 268.0 204.8 324.4 6.5	98.7 282.3 205.4 336.6 7.4	96.1 299.5 205.9 348.8 8.3	95.0 317.5 206.3 0.8 9.3	95.0 335.9 206.6 12.5 10.4	96.5 353.5 206.5 24.4 11.5	98.2 9.2 206.5 35.7 12.7
202.7 164.0 211.3 127.2 25.6	209.7 180.9 213.4 138.1 24.8	216.6 198.4 215.5 149.1 24.0	223.9 215.5 217.7 160.2 23.2	231.0 231.3 219.9 171.9 22.4	238.4 244.7 222.1 183.9 21.6	245.8 252.0 224.3 195.9 20.9	253.2 250.2 226.6 208.1 20.4	260.8 242.1 228.8 220.4 20.0	53	268.4 240.2 231.0 232.6 19.6	276.2 249.7 233.0 244.9 19.7	284.0 263.1 235.0 257.5 19.8	291.9 279.5 236.7 269.9 19.9	299.7 297.6 238.3 282.4 20.7	307.7 315.4 240.8 295.0 21.5	315.6 333.0 240.8 307.4 22.3	323.4 348.7 241.9 319.6 23.3	331.3 0.7 242.6 332.2 24.3	339.0 5.3 242.9 344.6 25.3
107.4 177.2 236.9 209.6 40.8	113.2 194.6 238.7 222.4 40.2	118.5 211.1 240.7 234.4 39.6	123.7 225.4 242.5 246.0 38.9	128.5 234.9 244.6 257.7 38.1	133.2 236.0 246.7 268.8 37.3	137.2 228.7 248.8 278.8 36.4	140.8 224.9 251.1 290.6 35.7	143.4 230.4 253.4 300.2 35.0	54	145.5 242.6 255.7 309.3 34.4	146.2 258.2 258.0 317.0 34.2	146.0 275.5 260.2 322.8 34.0	144.1 293.6 262.5 325.8 33.8	141.0 310.8 264.6 324.7 34.2	137.4 327.2 266.6 320.3 34.6	133.7 340.2 268.6 315.3 35.1	130.4 346.6 270.4 310.8 36.0	128.1 343.2 271.9 310.7 37.0	127.0 336.1 273.3 314.0 38.0
217.1 190.3 265.9 156.0 56.0	224.1 205.6 266.7 168.3 55.5	231.2 217.0 267.9 180.7 55.1	238.6 221.2 269.4 193.3 54.5	246.1 215.8 271.0 205.7 53.5	253.3 209.2 272.8 218.5 52.6	261.1 212.0 274.9 230.9 51.7	268.7 222.5 277.1 243.6 51.1	276.3 237.2 279.2 256.3 50.5	55	284.3 254.2 281.5 268.8 49.8	292.0 271.8 283.8 281.7 49.4	299.9 289.2 286.2 294.2 48.9	307.9 305.6 288.4 306.8 48.6	315.7 319.5 290.7 319.2 48.8	323.5 327.9 293.1 331.7 48.9	331.4 327.0 295.4 344.2 49.0	339.1 319.3 297.6 356.7 49.7	346.9 318.3 299.6 9.0 50.5	354.5 326.6 301.8 21.2 51.1
121.5 198.3 299.9 160.2 70.2	127.2 205.3 299.6 157.3 69.9	133.0 202.6 299.9 157.7 69.7	138.9 195.1 300.4 161.8 69.5	144.3 194.6 301.0 168.1 68.6	149.9 203.2 302.0 176.2 67.6	154.1 217.0 303.3 185.6 66.8	159.5 233.1 305.0 195.7 66.2	164.2 249.3 306.9 206.4 65.7	56	168.5 268.0 308.7 217.6 65.1	172.4 284.7 310.7 226.0 64.4	175.3 299.0 313.0 240.8 63.8	177.6 309.0 315.3 252.9 63.1	179.0 310.6 317.6 264.8 63.0	179.3 303.4 320.0 277.0 62.8	178.0 299.8 322.4 289.2 62.7	175.2 306.2 324.9 301.5 63.1	172.0 318.9 327.3 313.5 63.6	168.6 335.3 329.6 325.6 65.9
233.9 188.0 339.5 194.3 84.2	241.1 180.5 338.2 206.5 84.3	248.3 178.1 337.1 218.9 84.5	255.6 185.2 336.3 231.4 84.5	263.0 198.1 335.9 243.5 84.0	270.8 214.0 335.7 255.6 83.4	278.2 231.1 336.1 268.4 82.8	285.9 248.6 336.6 270.5 82.0	293.6 265.1 337.5 292.7 81.2	57	301.3 280.0 338.7 304.5 80.5	309.1 291.0 340.1 316.5 79.7	317.0 294.0 341.9 328.3 79.0	324.7 287.7 343.8 339.6 78.1	332.6 282.6 345.9 350.5 77.8	340.1 287.0 348.0 1.1 77.4	347.8 298.7 350.2 9.9 77.0	355.3 314.5 352.6 19.6 77.3	2.7 332.6 355.0 27.9 77.6	10.3 351.0 357.4 33.5 77.8
134.5 161.5 20.6 139.2 97.4	140.6 166.2 19.4 151.3 97.8	146.7 177.9 18.2 163.3 98.1	152.8 193.2 16.8 175.5 98.4	158.6 210.5 15.4 188.0 98.2	164.6 227.5 14.3 200.3 98.1	170.2 244.3 13.3 212.7 97.8	175.8 259.9 12.6 225.5 97.2	181.4 272.3 11.7 237.9 96.5	58	186.8 277.7 11.8 250.3 95.8	192.1 273.9 12.6 263.0 95.0	197.2 266.4 13.3 275.7 94.1	202.0 268.1 14.3 288.3 93.2	206.3 278.5 15.6 300.8 92.9	210.3 292.7 17.2 312.0 92.6	213.8 310.1 18.9 325.9 92.3	216.8 328.2 20.8 338.5 91.9	218.8 346.2 22.8 351.0 91.5	219.8 4.4 25.0 3.4 91.0
253.7 157.9 58.3 219.1 110.8	260.7 172.4 57.9 228.6 111.5	266.6 189.2 57.9 236.1 112.1	274.6 206.7 56.2 242.6 112.8	282.0 223.7 55.4 245.9 112.8	289.2 239.7 55.2 246.1 112.9	296.7 253.2 52.8 242.2 112.9	304.2 260.9 51.4 236.4 112.4	311.7 259.6 50.3 231.5 111.8	59	319.3 251.9 49.1 231.1 111.3	326.6 250.3 48.3 234.3 110.5	334.0 258.2 47.9 240.1 109.8	341.0 271.7 47.6 248.2 109.0	348.7 288.1 48.0 257.2 108.2	356.2 306.0 48.4 267.0 107.4	3.3 324.1 49.2 277.3 106.7	10.7 342.0 50.3 288.4 106.4	17.6 358.1 51.6 299.7 106.1	24.7 10.6 53.2 310.8 105.6
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 7	Mr 17	Mr 27	Ap 6
147.2 169.5 90.5 176.1 123.5	153.6 187.2 91.3 188.4 124.2	159.7 204.5 91.9 200.9 125.0	166.1 221.0 92.1 213.4 125.8	172.2 235.0 92.0 226.0 126.1	178.3 244.2 91.6 238.6 126.3	184.5 244.8 90.8 251.0 126.7	190.7 237.2 89.7 264.0 126.4	196.8 234.1 88.5 276.1 126.2	60	202.9 239.9 87.2 288.9 125.8	209.1 252.5 85.9 301.5 125.1	215.0 268.3 84.7 313.8 124.3	221.1 285.9 83.5 326.1 123.7	226.9 303.9 82.6 338.1 122.9	232.9 321.4 82.0 350.3 122.2	238.5 337.6 81.5 2.3 121.3	244.1 350.8 81.2 14.0 120.7	249.6 357.1 81.1 25.9 120.2	254.8 353.4 82.5 37.4 119.6

Mag. P. Phal. U. Phal. Hasta. Chit. Svati. Visa. Anur. Jyesh. Mula. P. Ash. U. Ash. Srav. Dan. Satab. P. Bhad. U. Bhad. Revati.
 133.3 146.7 160.0 173.3 186.7 200.0 213.3 226.7 240.0 253.3 266.7 280.0 293.3 306.7 320.0 333.3 346.7 360.0

Geocentric (Indian) Longitudes of Sun and Major planets at Ujjain

Day of S. Yr.	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
☉'s Mean Long.	357.0	6.9	16.7	26.6	36.4	46.3	56.1	66.0	75.9	85.7	95.6	105.4	115.3	125.1	135.0	144.8	154.7	164.6
Corrn. for do.	+2.1	+2.0	+1.9	+1.7	+1.4	+1.1	+0.8	+0.4	+0.0	-0.3	-0.7	-1.1	-1.4	-1.6	-1.9	-2.0	-2.1	-2.2
English date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Jl 20	Je 30	Jl 10	Jl 20	Jl 30	Au 9	Au 19	Au 29	S 8	S 18	S 28
Tamil month.	Chit	Chit	Chit	Chit	Vaik	Vaik	Vaik	Ani	Ani	Ani	Adi	Adi	Adi	Avan	Avan	Avan	Pur	Pur
Do. & date.	1	11	21	31	10	20	30	9	19	29	7	17	27	6	16	26	5	15
1860 Mars	257.4	262.2	266.6	270.4	274.1	276.6	278.3	279.0	278.2	276.5	274.0	271.4	269.5	269.0	269.7	271.6	271.6	278.6
☉'s L. Merc.	348.8	346.4	353.2	6.5	23.2	41.9	60.8	79.4	96.7	111.4	120.3	120.1	112.6	110.8	118.7	132.0	148.4	166.6
+6 Jup.	83.0	84.1	85.5	87.0	88.8	90.7	92.7	94.9	97.0	99.3	101.6	103.7	106.0	108.3	109.9	112.7	114.6	116.3
Ven.	42.9	54.1	64.4	74.5	83.6	92.1	98.2	102.9	103.8	100.7	94.4	88.3	86.5	87.7	92.4	99.2	107.7	117.0
Sat.	119.4	119.5	119.6	119.5	119.5	120.1	120.6	121.2	122.3	123.3	124.3	125.5	126.7	127.9	129.2	130.5	131.8	133.0
1861 Mars	43.2	49.8	55.4	62.9	69.5	75.9	82.4	88.7	95.3	101.7	108.0	114.5	120.7	127.1	133.7	139.8	146.2	152.6
☉'s L. Merc.	332.1	344.0	0.2	18.3	37.2	56.4	74.2	89.7	100.4	102.8	96.1	92.1	98.4	110.5	126.7	144.2	162.1	179.3
+3 Jup.	113.6	113.8	114.2	114.9	115.9	117.1	118.5	120.8	122.1	123.9	126.0	128.1	130.3	132.5	134.6	136.8	139.1	141.3
Ven.	351.2	3.7	16.0	28.5	40.7	53.1	65.2	77.6	89.6	101.9	114.3	126.4	138.5	150.7	162.7	174.8	186.9	199.1
Sat.	133.4	133.1	132.9	132.6	132.8	133.2	133.5	134.4	135.2	136.0	137.1	138.2	139.3	140.5	141.7	143.0	144.3	145.6
1862 Mars	281.6	288.2	294.9	301.5	308.0	314.4	320.7	326.7	332.3	337.6	342.4	346.4	349.5	351.5	352.4	351.9	349.9	347.1
☉'s L. Merc.	337.5	355.3	14.0	32.9	51.2	67.5	79.7	84.6	79.4	73.6	77.8	89.3	104.6	122.2	140.3	158.1	174.7	188.7
+1 Jup.	146.5	145.5	144.9	144.5	144.5	144.8	145.4	146.4	147.7	149.0	150.6	152.3	154.3	156.2	158.3	160.5	162.6	164.8
Ven.	316.6	324.1	332.7	342.6	352.7	3.4	14.5	25.7	37.2	48.8	60.6	72.4	84.3	96.1	108.3	120.5	132.6	144.9
Sat.	147.0	146.5	146.1	145.5	145.6	145.6	145.7	146.4	147.0	147.6	148.5	149.5	150.4	151.6	152.8	154.0	155.2	156.4
Eng. date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19	S 29
1863 Mars	58.4	64.5	70.6	76.7	82.9	89.1	95.3	101.6	107.8	114.1	120.3	126.7	133.0	139.3	145.7	152.1	158.5	165.2
☉'s L. Merc.	352.8	11.5	29.5	46.3	59.4	65.5	61.4	54.9	57.3	68.7	84.1	101.7	120.0	138.2	155.3	170.0	180.2	182.1
+8 Jup.	179.9	178.6	177.4	176.2	175.4	174.7	174.5	174.6	174.8	175.5	176.4	177.6	179.1	180.7	182.5	184.4	186.4	188.4
Ven.	29.0	40.9	52.9	64.8	75.9	87.9	99.4	110.5	121.5	131.6	141.6	150.9	159.2	165.5	169.9	171.1	167.8	161.6
Sat.	160.3	159.7	159.0	158.4	158.2	158.2	157.9	158.3	158.8	159.1	160.0	160.8	161.6	162.7	163.9	164.9	166.1	167.3
Eng. date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Je 20	Je 30	Jl 10	Jl 20	Jl 30	Au 9	Au 19	Au 29	S 8	S 18	S 28
1864 Mars	301.6	309.1	316.7	324.0	331.6	338.0	346.1	353.3	0.2	7.2	13.7	20.0	26.0	31.9	37.3	42.2	46.4	50.1
☉'s L. Merc.	6.7	24.0	37.8	45.8	44.0	36.5	27.0	46.8	61.7	79.0	97.5	115.9	133.5	149.4	161.5	166.3	161.4	154.7
+6 Jup.	214.0	213.0	211.8	210.5	209.2	208.0	206.9	206.3	205.4	204.9	204.9	205.2	205.9	206.8	208.1	209.5	211.1	212.9
Ven.	333.7	346.0	358.3	10.5	23.2	35.0	47.3	58.3	71.6	83.7	96.1	108.8	120.8	132.9	145.3	157.5	170.0	182.2
Sat.	173.5	172.7	171.9	171.2	170.8	170.6	170.1	170.2	170.4	170.5	171.2	171.8	172.6	173.7	174.9	176.1	177.1	178.1
1865 Mars	73.9	79.3	84.8	90.5	96.1	102.0	108.0	113.9	119.7	126.0	132.1	138.5	144.8	151.2	157.5	164.0	170.5	177.0
☉'s L. Merc.	16.2	25.5	25.8	18.4	18.6	24.6	38.6	56.0	74.3	93.1	111.3	128.0	141.7	148.8	146.5	138.9	138.9	147.6
+3 Jup.	246.9	246.8	246.3	245.7	244.8	243.6	242.3	241.0	239.8	238.6	237.5	236.8	236.4	236.4	236.7	237.2	238.1	239.4
Ven.	33.9	35.2	32.0	25.2	19.8	18.0	20.1	24.8	31.7	40.1	49.7	59.6	70.4	81.2	92.5	104.0	115.9	127.6
Sat.	186.3	185.5	184.8	184.0	183.4	182.9	182.2	182.2	182.1	182.1	182.5	183.0	183.4	184.3	185.1	186.1	187.2	188.3
1866 Mars	319.4	327.7	334.9	342.5	350.3	357.7	5.2	12.4	19.8	26.7	33.7	40.7	47.3	53.8	60.0	66.0	71.7	77.1
☉'s L. Merc.	8.2	1.0	357.0	3.0	15.8	32.7	51.0	69.0	88.7	106.0	120.7	130.1	130.7	123.1	120.7	127.6	140.8	157.0
+0 Jup.	277.7	278.7	279.5	280.0	280.1	279.8	279.2	278.3	277.1	275.9	274.7	273.3	272.1	271.0	270.2	269.6	269.5	269.6
Ven.	10.1	22.4	34.7	47.0	59.3	71.5	83.4	95.4	107.2	119.2	131.2	142.7	154.4	165.9	177.3	188.3	199.0	209.4
Sat.	198.7	197.9	197.2	196.3	195.6	194.9	194.3	194.0	193.6	193.4	193.6	193.9	194.2	194.9	195.6	196.3	197.3	198.4
Eng. date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19	S 29
1867 Mars	92.1	96.4	100.9	105.9	111.1	116.4	121.9	127.5	133.5	139.3	145.4	151.5	157.9	164.2	170.7	177.1	183.9	190.5
☉'s L. Merc.	338.4	343.0	354.9	11.3	29.6	48.8	67.4	85.3	100.4	111.3	113.4	106.4	102.9	108.6	121.3	137.2	154.7	172.4
+8 Jup.	306.8	308.8	310.4	311.8	313.1	314.1	314.7	315.0	314.9	314.5	313.8	312.8	311.6	310.3	308.9	307.6	306.3	305.0
Ven.	318.3	330.0	342.0	353.8	5.9	17.8	29.8	41.8	53.7	66.0	78.9	91.6	102.4	115.7	127.0	139.4	151.8	164.0
Sat.	210.8	210.0	209.2	208.5	207.7	207.0	206.3	205.8	205.4	204.9	205.0	205.0	205.1	205.4	205.6	205.8	207.1	208.5
Eng. date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Je 20	Je 30	Jl 10	Jl 20	Jl 30	Au 9	Au 19	Au 29	S 8	S 18	S 28
1868 Mars	336.8	344.4	352.3	359.8	7.3	14.9	22.2	29.5	36.8	43.8	50.8	57.5	64.4	70.8	77.3	83.5	89.6	95.6
☉'s L. Merc.	333.2	348.3	6.2	25.2	44.1	62.4	78.5	90.7	95.3	90.1	84.3	88.3	99.9	115.4	132.8	150.7	168.4	184.8
+5 Jup.	334.9	337.2	339.3	341.6	343.5	345.4	347.0	348.5	349.6	350.5	351.1	351.3	351.2	350.6	349.7	348.7	347.5	346.2
Ven.	43.2	53.9	64.5	74.4	83.4	91.4	97.5	101.0	101.7	97.3	91.0	85.7	83.8	87.1	91.5	98.9	107.4	117.3
Sat.	222.3	221.7	221.0	220.5	219.7	219.0	218.3	217.6	217.0	216.4	216.3	216.1	216.0	216.3	216.7	217.1	218.0	218.8
1869 Mars	115.2	117.3	120.2	123.5	127.8	132.1	137.0	142.3	147.6	153.4	159.2	165.6	171.5	177.8	184.3	190.8	197.4	204.3
☉'s L. Merc.	344.2	1.8	20.7	39.1	56.0	69.8	76.4	73.0	66.0	68.2	78.4	93.2	111.7	128.9	146.9	164.0	179.0	189.1
+3 Jup.	2.4	4.8	7.2	9.7	12.8	14.3	16.5	18.6	20.4	22.4	23.9	25.2	26.5	27.2	27.6	27.4	27.0	26.9
Ven.	351.8	4.3	16.8	29.1	41.2	53.7	65.8	78.1	90.2	102.5	114.7	127.0	139.1	151.1	163.4	175.4	187.5	199.5
Sat.	234.0	233.4	232.9	232.3	231.4	230.6	229.8	229.2	228.6	227.9	227.6	227.2	227.0	227.1	227.3	227.6	228.2	228.9
Mesh. Vrsb.	30	60	90	120	150	180	210	240	270	300	330	360	13.3	26.7	40.0	53.3	66.7	80.0
Mith. Kat. Sim. Kan., Tul. Vrsch. Dhan. Mak. Kum. Min. Asvn. Bhar. Krit. Rohi. Mrig. Ardh. Punar. Push. Asles.	90	120	150	180	210	240	270	300	330	360	13.3	26.7	40.0	53.3	66.7	80.0	93.3	106.7
	120	150	180	210	240	270	300	330	360	13.3	26.7	40.0	53.3	66.7	80.0	93.3	106.7	120.0

mean Sunrise for every ten days from A.D. 1860 to A.D. 1869.

180	190	200	210	220	230	240	250	260		270	280	290	300	310	320	330	340	350	360
174.4 -2.2 O 8 Pur 25	184.3 -2.1 O 18 Aipp 4	194.1 -1.9 O 28 Aipp 14	204.0 -1.7 N 7 Aipp 24	213.8 -1.5 N 17 Kart 4	223.7 -1.2 N 27 Kart 14	233.5 -0.9 D 7 Kart 24	243.4 -0.5 D 17 Marg 5	253.3 -0.1 D 27 Marg 15		263.1 +0.3 Ja 6 Marg 25	273.0 +0.6 Ja 16 Tai 5	282.8 +1.0 Ja 26 Tai 15	292.7 +1.3 F 5 Tai 25	302.5 +1.6 F 15 Masi 6	312.4 +1.8 F 25 Masi 16	322.2 +2.0 Mr 7 Masi 26	332.1 +2.1 Mr 17 Pang 6	342.0 +2.2 Mr 27 Pang 16	351.8 +2.2 Ap 6 Pang 26
283.3 183.6 118.4 126.3 134.1	288.7 200.6 120.6 138.0 135.3	294.3 215.4 121.4 149.2 136.3	300.3 226.5 122.6 160.3 137.2	306.5 229.9 123.5 172.4 138.2	312.9 224.5 124.2 184.2 139.0	319.5 218.2 124.3 196.0 139.9	325.9 221.5 124.3 208.2 139.7	332.7 232.2 123.7 220.5 139.6	61	339.3 247.3 123.1 232.9 139.7	346.2 264.4 122.6 245.4 139.1	353.0 282.0 121.1 257.8 138.6	359.8 299.6 119.8 270.4 138.0	6.4 316.2 118.5 282.7 137.2	13.3 330.0 117.2 295.3 136.4	19.9 338.0 116.0 307.7 135.6	26.7 337.3 115.1 320.1 134.9	33.3 329.7 114.4 332.7 134.2	39.7 328.7 113.8 344.9 133.5
159.2 195.5 143.5 211.1 146.9	165.4 208.1 145.5 222.9 147.9	171.8 215.3 147.3 234.7 149.0	178.3 211.2 149.2 246.5 150.0	184.7 203.7 150.8 257.7 150.7	191.3 203.9 152.1 268.9 151.5	197.8 212.8 153.3 279.9 152.1	204.3 226.5 154.2 290.3 152.3	210.9 243.2 154.7 300.1 152.6	62	217.5 260.6 155.1 308.8 152.8	224.2 278.2 155.1 315.9 152.6	230.7 294.7 154.7 321.3 152.3	237.4 309.4 154.0 323.1 151.9	244.0 319.1 153.1 321.3 151.2	250.9 320.5 151.9 315.5 150.4	257.7 312.1 150.9 310.2 149.7	264.5 309.6 149.8 307.5 148.9	271.3 316.7 148.1 308.9 148.2	278.5 329.6 147.0 312.0 147.4
344.6 197.7 167.1 157.4 157.7	343.0 197.4 169.2 169.5 158.9	342.1 189.7 171.3 181.9 160.1	342.6 187.1 173.5 194.4 161.3	345.4 193.8 175.4 206.9 162.0	347.8 206.6 177.4 219.7 163.0	350.5 222.0 179.1 232.0 163.9	354.3 239.4 180.6 244.8 164.3	358.7 256.9 181.9 257.6 164.8	63	3.6 273.6 183.2 270.1 165.2	8.4 288.8 184.1 282.7 165.0	14.0 300.1 184.8 295.4 164.9	19.4 303.8 185.1 308.0 164.8	24.9 297.8 185.1 320.4 164.3	30.8 292.5 184.7 332.9 163.7	36.7 296.2 184.0 345.6 163.1	42.9 307.8 183.1 357.9 162.3	48.3 323.7 182.0 10.2 161.6	54.7 341.5 180.8 22.2 160.8
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 7	Mr 17	Mr 27	Ap 6
171.6 175.1 190.6 156.3 168.6	178.2 170.8 192.7 154.6 169.8	184.7 176.0 194.9 156.2 171.0	191.3 187.8 197.2 161.1 172.3	198.1 203.1 199.4 163.2 173.2	204.8 219.1 201.5 177.0 174.2	211.6 237.5 203.6 186.5 175.1	218.6 254.4 205.6 196.9 175.7	225.4 269.9 207.4 207.8 176.2	64	232.5 282.0 209.3 218.9 176.9	239.5 287.3 210.9 230.6 177.0	246.6 282.7 212.3 254.4 177.2	253.8 275.9 213.5 254.4 177.3	261.0 278.0 214.5 266.9 176.8	268.8 288.4 215.0 278.7 176.4	275.7 303.2 215.6 290.7 175.9	283.1 320.8 215.5 303.0 175.2	290.4 339.2 215.1 315.1 174.5	297.9 357.7 214.5 327.5 173.7
O 8	O 18	O 28	N 7	N 17	N 27	D 7	D 17	D 27		Ja 6	Ja 16	Ja 26	F 5	F 15	F 25	Mr 7	Mr 17	Mr 27	Ap 6
52.6 157.5 214.9 194.9 179.1	54.4 168.0 216.8 207.3 180.3	55.0 182.5 218.8 219.5 181.5	54.0 199.2 221.1 231.8 182.7	52.1 216.6 223.3 244.1 183.8	49.1 223.8 225.5 256.5 184.9	45.6 249.6 227.7 263.7 185.9	42.9 262.9 230.0 281.1 186.7	41.2 270.4 232.2 293.1 187.4	65	40.7 268.9 234.4 304.9 188.3	41.3 260.7 236.5 316.9 188.5	42.9 259.9 238.5 328.5 188.7	45.5 268.3 240.2 340.0 189.0	48.5 282.0 242.3 350.8 188.9	52.2 298.6 243.3 1.3 188.8	56.5 316.8 244.7 10.5 188.6	61.2 335.0 245.8 19.2 188.0	66.2 353.0 246.5 27.1 187.1	71.2 9.0 246.9 32.4 186.5
183.8 161.6 240.8 139.8 189.2	190.5 178.2 242.4 151.7 190.6	197.3 195.7 244.1 163.9 191.8	204.3 213.0 246.0 176.1 192.9	211.1 229.4 248.0 188.4 194.0	218.1 243.5 250.1 200.9 195.2	225.1 252.8 252.4 213.3 196.3	232.3 254.1 254.7 226.0 197.2	239.6 246.7 257.0 238.3 198.0	66	246.8 242.9 259.3 251.0 199.0	254.3 248.7 261.6 263.6 199.6	261.6 261.2 263.9 276.3 200.1	269.3 277.0 266.2 289.0 200.6	276.8 294.4 268.3 301.4 200.6	284.4 312.6 270.3 314.1 200.7	292.1 330.2 272.4 326.7 200.6	300.0 347.1 274.2 339.1 200.1	307.7 0.5 275.8 351.6 179.1	315.4 7.7 277.3 4.0 198.9
82.4 174.3 270.0 219.0 199.4	86.9 191.9 271.0 227.9 200.6	90.8 208.5 272.1 235.2 201.8	94.4 223.9 273.4 242.1 202.9	97.2 235.1 275.0 244.0 204.0	99.0 239.0 276.8 243.2 205.1	99.8 233.5 278.6 238.5 206.3	99.3 227.2 280.8 232.2 207.2	97.7 230.1 282.9 228.7 208.4	67	94.8 240.7 285.2 229.2 209.5	90.9 255.6 287.4 232.9 210.0	87.0 272.8 289.7 239.2 210.6	83.9 290.7 292.1 247.6 211.2	81.8 308.3 294.4 256.7 211.0	81.2 325.0 296.8 266.9 210.9	82.3 339.4 299.2 277.3 210.7	83.8 348.2 301.5 288.2 210.9	86.5 347.9 303.6 299.7 211.0	89.9 340.3 305.8 311.1 211.1
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 7	Mr 17	Mr 27	Ap 6
197.2 189.4 304.7 176.7 209.5	204.2 205.5 304.5 189.0 210.6	211.2 217.7 304.5 201.7 211.7	218.3 223.6 304.9 214.0 212.3	225.3 219.8 305.5 226.7 214.1	232.7 212.3 306.5 239.2 215.3	240.0 213.2 307.7 251.8 216.5	247.4 222.9 309.3 264.4 217.4	254.8 236.6 311.1 277.1 218.6	68	262.5 253.3 313.0 289.5 219.6	270.1 270.9 314.8 301.9 220.5	277.9 288.3 317.0 314.3 221.3	285.5 305.3 319.3 326.7 222.1	293.4 319.6 321.6 339.7 222.4	301.2 329.6 324.0 350.9 222.8	309.2 330.7 326.5 2.7 223.1	317.1 323.2 328.8 14.6 222.9	324.9 320.2 331.1 26.3 222.8	332.7 327.1 333.7 37.8 222.6
O 8	O 18	O 28	N 7	N 17	N 27	D 7	D 17	D 27		Ja 6	Ja 16	Ja 26	F 5	F 15	F 25	Mr 7	Mr 17	Mr 27	Ap 6
101.2 198.4 344.7 127.2 219.6	106.8 207.0 343.5 138.3 220.6	111.9 206.1 342.5 149.3 221.6	116.8 198.5 341.6 161.0 222.7	121.3 196.4 340.9 172.7 223.9	125.4 203.5 340.8 184.7 225.1	128.7 216.3 340.9 196.7 226.2	131.4 232.1 341.2 208.9 227.3	133.2 249.6 342.2 221.3 228.3	69	133.9 267.0 343.0 233.4 229.5	133.5 283.9 344.5 245.8 230.4	131.5 299.1 346.1 258.3 231.2	128.4 310.2 347.9 270.9 232.2	124.9 313.7 349.9 283.4 232.8	121.2 307.4 352.1 296.0 233.3	117.9 301.6 354.3 308.4 233.9	115.4 306.6 356.5 320.8 233.9	114.5 318.5 358.8 333.2 234.0	114.7 334.5 1.2 345.6 234.0
211.1 191.6 26.0 211.4 229.4	218.2 185.0 24.9 223.3 230.4	225.3 180.2 23.6 235.1 231.4	232.6 184.7 22.3 246.9 232.4	239.9 196.3 21.0 258.2 233.5	247.2 211.6 19.9 269.3 234.6	255.0 228.5 18.8 280.1 235.8	262.6 245.8 18.1 290.1 236.9	270.2 262.8 17.5 299.9 238.0	70	277.9 278.5 17.3 308.4 239.2	285.7 291.1 17.5 314.5 240.3	293.6 296.7 18.0 319.6 241.3	301.4 292.7 19.0 320.8 242.3	309.4 294.3 20.1 317.7 243.0	317.3 296.1 21.5 311.6 243.8	325.0 306.4 23.5 306.6 244.4	332.9 321.1 25.0 304.9 244.7	340.7 338.0 26.9 306.9 244.9	348.4 348.2 29.1 311.8 245.2

Mag. P. Phal. U. Phal. Hasta. Chit. Svati. Visa. Anur. Jyesh. Mula. P. Ash. U. Ash. Sra. Dan. Satab. P. Bhad. U. Bhad. Revati.
 133.3 146.7 160.0 173.3 186.7 200.0 213.3 226.7 240.0 253.3 266.7 280.0 293.3 306.7 320.0 333.3 346.7 360.0

Geocentric (Indian) Longitudes of Sun and Major planets at Ujjain

Day of S. Yr.	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
☉'s Mean L.	357.0	6.9	16.7	26.6	36.4	46.3	56.1	66.0	75.9	85.7	95.6	105.4	115.3	125.1	135.0	144.8	154.7	164.6
Corrn. for do.	+2.1	+2.0	+1.9	+1.7	+1.4	+1.1	+0.8	+0.4	+0.0	-0.3	-0.7	-1.1	-1.4	-1.6	-1.9	-2.0	-2.1	-2.1
English date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Je 20	Je 30	Jl 10	Jl 20	Jl 30	Au 9	Au 19	Au 29	S 8	S 18	S 28
Tamil month.	Chit	Chit	Chit	Chit	Vaik	Vaik	Vaik	Ami	Ami	Ami	Adi	Adi	Adi	Adi	Avan	Avan	Avan	Pura
Do. date.	1	11	21	31	10	20	30	9	19	29	7	17	27	6	16	26	5	15
1870 Mars ...	352.3	0.0	7.7	15.1	22.5	29.8	37.1	44.2	51.4	58.2	65.0	71.8	78.4	85.0	91.4	97.7	104.0	110.3
☉'s L. Merc. ...	357.5	14.8	33.3	47.7	56.5	55.7	48.2	47.5	56.4	71.0	88.2	106.3	124.7	142.4	158.3	170.4	175.7	180.9
+0 Jup. ...	30.0	32.2	34.5	36.9	39.2	41.6	44.0	46.3	48.8	51.1	53.1	55.1	56.9	58.6	59.9	61.1	62.1	63.1
Ven. ...	314.1	322.9	332.0	341.9	352.2	3.0	14.0	25.4	36.9	48.7	60.4	72.3	84.1	96.0	108.2	120.4	132.5	144.6
Sat. ...	245.2	245.0	244.7	244.6	243.8	242.9	242.0	241.2	240.5	239.8	239.3	238.9	238.3	237.3	236.2	235.2	234.6	234.0
Eng. date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19	S 29
1871 Mars ...	148.6	147.1	147.0	148.2	150.1	152.9	156.7	160.8	165.6	170.6	176.0	181.8	187.6	193.8	200.2	206.7	213.4	220.1
☉'s L. Merc. ...	12.1	27.1	36.5	36.8	29.2	27.7	35.7	50.0	66.9	85.5	103.9	122.0	138.7	151.8	158.6	155.9	148.4	141.9
+7 Jup. ...	58.0	59.9	61.8	63.8	66.0	68.1	70.4	72.8	75.2	77.5	79.8	82.0	84.3	86.4	88.3	90.2	91.9	93.6
Ven. ...	29.5	41.5	53.2	65.3	77.0	88.4	99.8	110.8	121.3	131.9	141.5	150.6	158.5	164.4	168.0	168.6	164.3	159.9
Sat. ...	256.3	256.0	255.8	255.6	255.4	255.1	254.9	253.7	252.6	251.4	250.8	250.3	249.7	249.5	249.4	249.2	249.5	249.8
Eng. date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Je 20	Je 30	Jl 10	Jl 20	Jl 30	Au 9	Au 19	Au 29	S 8	S 18	S 28
1872 Mars ...	8.1	15.5	23.0	30.2	37.5	44.5	51.5	58.4	65.3	72.1	78.8	85.4	92.0	98.4	104.8	111.1	117.5	123.8
☉'s L. Merc. ...	14.2	18.3	11.8	8.0	14.1	27.4	43.9	62.4	81.2	99.6	116.8	131.3	140.7	140.6	133.0	130.7	138.1	145.5
+5 Jup. ...	87.1	88.1	89.3	90.7	92.4	94.3	96.2	98.3	100.4	102.6	104.8	107.0	109.3	111.7	113.9	116.1	118.2	120.3
Ven. ...	334.2	346.5	358.7	11.0	23.1	35.3	47.6	59.8	72.1	84.4	96.6	108.8	121.3	133.4	145.8	158.0	170.5	182.9
Sat. ...	267.2	267.2	267.3	267.2	266.7	266.0	265.6	264.9	264.2	263.5	262.8	262.2	261.4	261.0	260.5	260.2	260.3	260.6
1873 Mars ...	199.5	196.6	193.3	190.0	187.7	186.7	186.8	188.3	190.9	194.2	198.2	202.7	208.0	213.5	219.5	225.5	231.9	238.2
☉'s L. Merc. ...	354.8	348.9	352.8	4.9	20.7	38.9	57.9	76.8	94.4	110.1	121.1	123.9	117.4	112.8	118.1	130.0	145.9	161.8
+2 Jup. ...	118.8	118.2	118.3	118.9	119.7	120.8	122.2	123.8	125.5	127.3	129.3	131.5	133.5	135.8	138.0	140.0	142.4	144.7
Ven. ...	32.2	32.3	28.3	22.0	16.7	15.7	18.6	24.1	31.2	40.0	49.6	59.9	70.4	81.4	92.8	104.3	116.2	128.1
Sat. ...	278.0	278.3	278.5	278.7	278.3	278.0	277.7	277.1	276.4	275.7	274.3	273.0	271.5	271.6	271.7	271.7	271.7	271.7
1874 Mars ...	22.8	29.8	36.8	43.9	50.8	57.7	64.4	71.1	78.1	84.4	91.0	97.5	103.9	110.4	116.8	123.1	129.5	135.8
☉'s L. Merc. ...	332.7	342.6	357.8	15.7	34.4	53.4	71.4	87.2	100.8	106.2	101.3	95.1	98.3	109.1	124.3	141.5	159.4	177.3
+0 Jup. ...	150.9	149.9	149.2	148.7	148.6	148.7	149.4	150.2	151.3	152.5	154.0	156.0	157.7	159.5	161.6	163.8	165.9	168.0
Ven. ...	10.7	23.0	35.3	47.6	59.9	72.0	84.0	96.1	107.7	119.6	131.6	143.1	154.8	166.5	177.5	188.5	199.0	209.5
Sat. ...	288.8	289.2	289.7	290.1	290.0	289.8	289.8	289.3	288.7	288.2	287.4	286.7	285.8	285.1	284.4	283.8	283.5	283.2
Eng. date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19	S 29
1875 Mars ...	245.1	248.5	251.2	252.7	253.1	252.7	251.3	248.7	246.4	243.6	242.1	243.4	243.7	246.1	249.7	253.8	258.9	264.0
☉'s L. Merc. ...	337.1	354.3	13.0	31.5	50.2	67.1	80.8	87.4	83.8	76.9	78.7	89.1	104.0	121.2	139.5	157.3	174.1	190.9
+7 Jup. ...	184.7	183.3	182.1	180.9	180.0	179.3	178.8	178.7	178.9	179.4	180.2	181.3	182.6	184.1	185.8	187.9	189.8	191.7
Ven. ...	318.6	330.3	342.3	354.3	6.2	18.1	30.2	42.3	54.0	66.5	78.7	90.7	102.9	115.2	127.5	139.9	152.3	164.6
Sat. ...	299.7	300.4	301.0	301.6	301.8	301.8	301.9	301.4	301.0	300.6	299.9	299.2	298.5	297.7	297.0	296.2	295.7	295.2
Eng. date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Je 20	Je 30	Jl 10	Jl 20	Jl 30	Au 9	Au 19	Au 29	S 8	S 18	S 28
1876 Mars ...	27.6	44.4	51.1	57.9	64.4	71.0	77.6	84.2	90.6	97.1	103.5	109.9	116.3	122.6	129.1	135.3	141.7	148.0
☉'s L. Merc. ...	349.8	7.4	27.1	44.7	58.9	67.7	66.6	59.0	58.6	67.8	81.9	98.9	117.2	135.3	152.8	168.5	180.4	192.3
+5 Jup. ...	218.7	217.8	216.6	215.3	214.1	212.8	211.6	210.6	209.9	209.4	209.2	209.4	209.9	210.8	211.8	213.8	214.6	215.5
Ven. ...	43.4	54.4	64.7	74.2	83.1	90.6	96.6	99.3	98.8	93.8	87.4	82.5	81.8	84.8	90.9	98.5	107.4	116.3
Sat. ...	310.6	311.6	312.5	313.6	313.8	313.8	314.1	313.9	313.8	313.5	312.9	312.2	311.6	310.8	310.1	309.2	308.6	308.0
1877 Mars ...	272.8	279.0	285.3	291.1	296.9	302.2	307.5	312.1	316.5	319.8	322.4	323.8	323.3	322.1	319.8	317.2	314.9	312.6
☉'s L. Merc. ...	3.5	21.6	36.8	47.1	48.5	41.1	38.5	45.9	59.4	76.3	94.3	113.0	130.9	147.5	160.9	168.3	166.1	163.8
+2 Jup. ...	251.3	251.5	251.1	250.6	249.8	248.7	247.4	246.1	244.7	243.5	242.5	241.7	241.0	240.8	241.1	241.4	242.1	242.8
Ven. ...	352.5	5.0	17.3	29.4	42.0	54.2	66.3	78.6	90.8	102.8	115.2	127.5	139.6	151.6	163.8	175.7	187.8	199.9
Sat. ...	321.7	322.6	323.6	324.5	325.2	325.8	326.5	326.5	326.6	326.6	326.1	325.7	325.1	324.4	323.7	322.9	322.1	321.4
1878 Mars ...	52.1	58.4	64.9	71.0	77.2	83.5	89.9	96.1	102.6	108.7	115.0	121.4	127.8	134.2	140.5	146.9	153.2	159.5
☉'s L. Merc. ...	14.7	26.2	29.6	23.4	18.8	24.2	36.9	53.3	71.5	90.2	108.7	125.8	140.6	150.0	150.9	143.7	140.5	137.3
-1 Jup. ...	281.8	283.0	283.8	284.5	284.8	284.8	284.4	283.6	282.6	281.5	280.1	278.7	277.5	276.4	275.4	274.6	274.2	273.8
Ven. ...	314.0	322.7	331.7	341.2	352.5	3.2	14.3	25.7	37.2	49.4	60.9	72.6	84.5	96.6	108.7	120.9	133.0	145.1
Sat. ...	332.9	334.0	335.0	336.2	337.0	337.6	338.5	338.9	339.2	339.6	339.3	339.1	338.8	338.2	337.5	336.8	336.0	335.3
Eng. date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19	S 29
1879 Mars ...	294.5	301.5	308.7	316.1	323.4	330.5	337.4	344.2	350.9	357.5	3.6	9.5	14.9	20.1	24.4	28.0	30.9	33.8
☉'s L. Merc. ...	10.8	5.5	359.8	4.0	16.0	31.9	50.5	69.1	87.8	105.5	120.8	131.7	134.0	127.2	123.6	128.3	140.4	152.5
+7 Jup. ...	310.8	312.7	314.5	316.0	317.4	318.5	319.4	319.9	319.9	319.7	319.3	318.4	317.2	316.0	314.6	313.2	312.1	311.0
Ven. ...	29.9	41.9	53.7	65.7	77.2	88.8	100.0	111.2	121.7	131.9	141.5	150.2	157.5	163.2	165.4	165.2	160.5	155.8
Sat. ...	344.4	345.6	346.8	348.1	349.1	349.9	351.0	351.5	352.1	352.6	353.0	353.3	353.7	352.7	352.0	351.1	350.3	349.6
Mesh. Vrsh. Mith. Kat. Sim. Kan. Tul. Vrsch. Dhan. Mak. Kum. Min. Asvn. Bhar. Krit. Rohi. Mrig. Ardh. Punar. Push. Ash.	30	60	90	120	150	180	210	240	270	300	330	360	13.3	26.7	40.0	53.3	66.7	80.0

Mean Sunrise for every ten days from A.D. 1870 to A.D. 1879.

180	190	200	210	220	230	240	250	260		270	280	290	300	310	320	330	340	350	360
74.4 2.2 0 8 Pur 25	184.3 -2.1 0 18 Aipp 4	194.1 -1.9 0 28 Aipp 14	204.0 -1.7 N 7 Aipp 24	213.8 -1.5 N 17 Kart 4	223.7 -1.2 N 27 Kart 14	233.5 -0.9 D 7 Kart 24	243.4 -0.5 D 17 Marg 5	253.3 -0.1 D 27 Marg 15		263.1 +0.3 Ja 6 Marg 25	273.0 +0.6 Ja 16 Tai 5	282.8 +1.0 Ja 26 Tai 15	292.7 +1.3 F 5 Tai 25	302.5 +1.6 F 15 Masi 6	312.4 +1.8 F 25 Masi 16	322.2 +2.0 Mr 7 Masi 26	332.1 +2.1 Mr 17 Pang 6	342.0 +2.2 Mr 27 Pang 16	351.8 +2.2 Ap 6 Pang 26
16.2 64.4 63.0 57.3 39.4	121.9 166.6 63.0 169.4 240.4	127.5 176.5 62.5 181.8 241.5	133.2 191.0 61.8 194.5 242.4	138.4 207.4 60.8 206.8 243.4	143.7 224.8 59.6 219.6 244.4	148.3 241.9 58.3 232.1 245.6	153.0 258.1 57.0 245.7 246.8	156.8 271.6 55.8 257.3 248.0	71	160.5 279.4 54.5 270.0 249.1	163.2 278.3 53.6 282.8 250.2	165.0 270.7 52.9 295.3 251.2	165.9 267.2 52.5 307.9 252.4	165.6 277.1 52.5 320.3 253.2	163.7 290.8 52.9 333.0 253.9	160.8 307.3 53.6 345.3 254.8	157.0 323.2 54.5 357.8 255.2	153.0 342.0 55.7 10.1 255.7	149.7 0.1 57.1 22.1 256.2
0 9	0 19	0 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 7	Mr 17	Mr 27	Ap 6
27.3 57.7 94.6 53.4 50.0	234.3 171.8 95.5 152.3 250.8	241.6 188.2 96.1 154.5 251.5	249.1 205.5 96.5 160.2 252.3	256.4 222.8 96.6 167.7 253.4	264.0 239.3 96.2 176.7 254.5	271.6 253.2 95.7 186.4 255.6	279.2 262.4 94.7 196.9 256.7	287.2 262.9 93.5 208.0 257.8	72	294.9 255.5 92.3 219.2 259.0	302.9 252.2 91.0 230.9 260.1	310.6 258.4 89.6 242.6 261.2	318.4 271.2 88.4 254.7 262.4	326.1 287.3 87.4 266.9 263.3	334.0 305.0 86.7 279.0 264.3	341.6 323.1 86.2 291.2 265.2	349.3 341.0 86.0 303.3 265.9	356.8 357.8 86.0 315.6 266.5	4.5 11.2 86.8 328.0 267.1
0 8	0 18	0 28	N 7	N 17	N 27	D 7	D 17	D 27		Ja 6	Ja 16	Ja 26	F 5	F 15	F 25	Mr 7	Mr 17	Mr 27	Ap 6
29.7 67.2 21.9 95.4 60.5	135.7 184.6 123.6 207.8 261.2	141.8 202.0 125.1 220.8 261.8	147.5 218.6 127.3 232.3 262.4	153.3 233.6 126.5 244.6 263.3	158.9 244.5 128.1 257.0 264.3	164.7 248.0 128.6 269.3 265.3	170.1 241.9 128.7 281.4 266.6	175.2 236.3 128.3 293.5 267.7	73	180.2 239.6 127.8 305.6 268.8	185.0 250.7 127.1 317.4 270.0	189.5 265.8 126.1 328.8 271.2	193.4 283.1 124.8 339.9 272.3	197.0 301.2 123.5 350.6 273.4	199.7 318.9 122.1 1.2 274.4	201.7 334.7 120.9 10.6 275.4	202.6 350.1 119.9 19.1 276.2	202.5 358.8 119.0 26.6 276.9	200.9 358.5 118.4 31.1 277.7
45.4 80.8 46.7 39.5 71.5	252.5 197.9 148.8 152.2 271.9	259.6 213.8 150.7 164.2 272.4	266.8 226.2 152.6 176.6 272.8	274.3 232.2 154.3 188.9 273.7	281.8 228.8 155.7 201.4 274.5	289.3 221.6 157.2 213.8 275.4	296.9 222.0 158.2 226.4 276.5	304.4 231.0 158.7 238.8 277.6	74	312.1 245.0 159.2 251.5 278.8	319.6 261.7 159.3 264.1 280.0	327.3 279.3 159.0 276.7 281.2	334.8 297.9 158.5 289.5 282.3	342.3 314.0 157.8 302.0 283.5	349.8 328.8 156.5 314.1 284.7	357.2 339.0 155.3 326.6 285.8	4.7 341.1 154.1 339.2 286.7	11.8 334.3 152.6 351.7 287.7	19.0 331.6 151.7 4.4 288.5
42.1 93.4 70.2 21.8 283.0	148.2 207.2 172.4 227.4 283.2	154.3 215.8 174.6 234.4 283.3	160.5 215.5 176.8 239.7 283.5	166.5 207.7 178.8 241.4 284.3	172.6 205.2 180.7 239.8 285.1	178.7 211.9 182.5 233.4 285.7	184.6 224.7 184.2 228.2 286.7	190.5 240.6 185.7 225.9 287.8	75	196.5 257.8 186.9 227.2 288.9	202.4 275.6 187.9 234.2 290.1	208.0 292.7 188.6 238.8 291.3	213.6 307.9 189.2 247.4 292.4	219.1 319.4 189.3 256.7 293.6	224.3 323.8 189.0 266.9 294.7	229.5 318.3 188.7 277.6 296.0	234.2 312.4 187.8 288.7 297.1	238.6 316.3 186.8 300.2 298.2	242.8 328.0 185.5 311.5 299.3
0 9	0 19	0 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 7	Mr 17	Mr 27	Ap 6
270.3 198.9 193.9 177.2 294.8	276.4 200.6 196.0 189.5 294.8	282.8 193.6 198.2 202.0 294.9	289.6 189.2 200.4 214.5 294.9	296.3 194.4 202.6 227.2 295.5	303.3 206.0 204.7 239.8 296.0	310.1 221.4 206.9 252.1 296.6	317.1 238.4 209.0 265.0 297.6	324.3 255.9 211.0 277.5 298.7	76	331.4 272.8 212.9 290.0 299.6	338.5 288.6 214.6 302.4 300.8	345.5 301.1 216.1 314.8 302.0	352.7 306.4 217.3 327.0 303.1	359.8 302.2 218.3 339.2 304.3	6.7 295.5 219.2 315.4 305.5	13.6 297.4 219.7 3.2 306.7	20.5 307.8 219.9 14.9 307.9	27.4 322.3 219.5 26.6 309.0	34.3 340.6 219.1 37.9 310.1
0 8	0 18	0 28	N 7	N 17	N 27	D 7	D 17	D 27		Ja 6	Ja 16	Ja 26	F 5	F 15	F 25	Mr 7	Mr 17	Mr 27	Ap 6
154.4 180.1 218.2 127.6 307.4	160.6 173.7 220.2 138.5 307.1	167.2 176.0 222.3 149.7 306.9	173.5 186.4 224.4 161.4 306.7	179.8 200.9 226.6 173.1 307.0	186.3 217.5 228.3 185.0 307.5	192.6 234.8 231.1 197.1 307.8	199.0 252.0 233.4 209.5 308.7	205.5 268.2 235.5 221.9 309.5	77	211.9 281.5 237.8 234.2 310.4	218.4 289.3 40.0 246.5 311.5	224.7 287.4 242.0 258.9 312.6	231.1 279.7 243.8 271.5 313.7	237.5 278.5 245.6 284.0 314.9	244.1 287.2 247.2 296.6 316.1	250.5 301.2 248.6 309.0 317.4	256.9 318.1 249.8 321.4 318.7	263.4 336.4 250.7 333.8 320.0	269.6 355.0 251.3 346.2 321.2
314.4 158.1 244.5 211.8 320.6	315.9 166.5 246.0 224.0 320.2	318.8 180.4 247.7 235.4 319.9	322.4 196.6 249.5 247.2 319.5	326.8 213.9 251.7 258.3 319.5	331.2 231.1 253.6 269.4 319.7	336.4 247.3 255.9 279.0 319.7	341.1 261.8 258.2 290.0 320.3	347.3 271.3 260.5 299.6 321.0	78	353.3 272.6 262.9 307.5 321.7	359.0 265.2 265.2 314.0 322.7	5.2 261.6 267.5 317.5 323.8	11.3 267.4 269.8 317.9 324.8	17.5 279.9 272.0 313.7 326.0	23.7 296.0 274.0 307.9 327.2	29.9 313.8 276.1 305.2 328.5	36.0 332.1 278.0 302.1 329.8	42.6 350.3 279.8 304.2 331.1	48.9 7.2 281.4 310.9 332.3
166.2 159.7 274.6 157.6 334.5	172.7 175.6 275.2 169.9 333.8	179.2 192.9 276.1 182.3 333.2	185.8 210.1 277.4 195.0 332.5	192.3 226.9 278.9 207.4 332.4	199.1 242.2 280.5 220.1 332.2	205.8 253.1 282.5 232.6 332.2	212.5 257.0 284.5 245.2 332.6	219.4 251.5 286.6 258.0 333.1	79	226.1 245.4 288.8 270.9 333.5	233.0 248.5 291.0 283.3 334.5	240.0 259.2 293.4 295.8 335.4	246.9 274.4 295.8 308.4 336.3	254.0 291.7 298.1 320.8 337.4	261.0 309.8 300.5 333.3 338.5	268.3 327.7 302.9 346.0 339.7	275.5 344.8 305.2 358.3 341.0	282.6 359.6 307.5 10.6 342.3	289.9 9.1 309.6 22.6 343.5
0 9	0 19	0 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 7	Mr 17	Mr 27	Ap 6
33.0 173.3 310.2 150.0 348.7	31.6 191.0 309.5 150.1 348.0	29.6 207.9 308.8 153.3 347.3	26.8 223.6 308.6 159.4 346.5	24.2 235.7 309.0 167.3 346.2	21.9 241.4 309.8 176.5 345.8	20.7 237.4 310.9 186.2 345.5	20.8 230.2 312.3 197.0 345.7	22.1 231.2 313.9 208.0 345.8	80	23.8 240.8 315.8 219.6 346.1	27.0 255.1 317.8 231.3 346.8	30.4 271.9 319.9 243.3 347.6	34.3 289.6 322.2 255.3 348.2	37.8 307.6 324.5 267.4 349.4	43.6 324.7 325.8 279.9 350.5	48.7 339.5 329.3 291.8 351.5	53.8 348.7 331.7 303.9 352.7	59.2 351.7 334.1 316.2 354.1	64.5 346.9 336.5 328.6 355.4
Mag. 33.3	P.Phal. 146.7	U.Phal. 160.0	Haast. 173.3	Chit. 186.7	Svati. 200.0	Visa. 213.3	Anur. 226.7	Jyesh. 240.0	Mula. 253.3	P.Ash. 266.7	U.Ash. 280.0	Srav. 293.3	Dan. 306.7	Satab. 320.0	P.Bhad. 333.3	U.Bhad. 346.7	Revati. 360.0		

Geocentric (Indian) Longitudes of Sun and Major planets at Ujjain

Day of S. Yr.	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
☉'s Mean L.	357.0	6.9	16.7	26.6	36.4	46.3	56.1	66.0	75.9	85.7	95.6	105.4	115.3	125.1	135.0	144.8	154.7
Corrn. for do.	+2.1	+2.0	+1.9	+1.7	+1.4	+1.1	+0.8	+0.4	+0.0	-0.3	-0.7	-1.1	-1.4	-1.6	-1.9	-2.0	-2.1
English date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Je 20	Je 30	Jl 10	Jl 20	Jl 30	Au 9	Au 19	Au 29	S 8	S 18
Tamil month.	Chit	Chit	Chit	Chit	Vaik	Vaik	Vaik	Ami	Ami	Ami	Adi	Adi	Adi	Avan	Avan	Avan	Pur
Do. date.	1	11	21	31	10	20	30	9	19	29	7	17	27	6	16	26	5
1880 Mars ...	67.5	73.2	79.1	84.9	90.9	96.9	103.0	108.9	115.1	121.3	127.4	133.8	140.1	146.4	152.8	159.2	165.7
☉'s L. Merc. ...	341.5	343.2	353.7	8.8	26.7	45.7	64.5	83.1	99.1	111.5	116.6	111.5	105.6	108.6	119.7	135.6	151.8
+4 Jup. ...	338.6	340.9	343.2	345.4	347.5	349.5	351.2	352.7	353.9	355.0	355.7	356.0	356.1	355.6	355.1	354.2	353.2
Ven. ...	334.7	346.9	359.2	11.5	23.6	36.0	48.1	60.5	72.6	84.9	97.2	109.3	121.8	133.9	146.2	158.5	171.0
Sat. ...	354.9	356.5	358.2	359.9	1.1	2.2	3.3	4.0	4.8	5.6	5.8	6.1	6.4	6.2	5.9	5.7	5.3
1881 Mars ...	312.7	320.2	328.0	335.6	343.2	350.6	358.0	5.4	12.5	19.7	26.5	33.3	39.9	46.1	52.1	58.0	63.4
☉'s L. Merc. ...	332.1	346.3	3.6	22.3	41.3	59.8	76.7	90.6	97.8	95.3	88.0	88.9	98.6	113.1	130.1	148.1	165.8
+2 Jup. ...	6.2	8.6	11.0	13.4	15.8	18.2	20.5	22.6	24.6	26.5	28.2	29.7	30.9	31.8	32.4	32.7	32.6
Ven. ...	30.3	29.3	24.3	17.2	13.9	13.9	17.4	23.5	31.0	39.9	49.8	60.1	70.6	82.2	93.4	104.9	116.8
Sat. ...	7.9	9.2	10.5	11.9	13.2	14.4	15.6	16.6	17.5	18.6	19.1	19.4	20.3	20.4	20.4	20.5	19.9
1882 Mars ...	84.3	89.0	94.1	99.3	104.7	110.3	116.0	121.8	127.7	133.7	139.8	146.0	152.4	158.6	165.0	171.6	178.1
☉'s L. Merc. ...	340.7	358.9	17.8	36.4	53.9	68.9	78.1	77.9	70.5	69.2	77.4	91.2	108.0	125.9	144.1	161.4	177.2
-1 Jup. ...	33.8	36.0	38.3	40.6	42.9	45.3	47.8	50.1	52.3	54.6	56.9	58.9	60.9	62.6	64.1	65.4	66.5
Ven. ...	11.2	23.6	35.8	48.3	60.0	72.4	84.5	96.4	108.3	120.1	132.1	143.4	155.1	166.8	177.6	188.6	199.3
Sat. ...	20.0	21.3	22.6	24.0	25.4	26.8	28.1	29.3	30.4	31.5	32.3	33.1	33.9	34.2	34.5	34.8	34.5
Eng. Date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19
1883 Mars ...	330.4	338.1	345.9	353.5	1.1	8.7	16.1	23.4	30.6	37.7	44.8	51.5	58.2	64.7	71.1	77.4	83.3
☉'s L. Merc. ...	356.5	15.0	32.7	48.0	58.2	59.5	51.9	49.6	56.9	70.6	87.2	105.3	123.7	141.6	157.9	171.0	177.8
+6 Jup. ...	62.1	63.8	65.6	67.5	69.7	71.8	74.1	76.4	78.7	81.0	83.3	85.6	87.9	89.9	91.8	93.8	95.6
Ven. ...	318.9	330.8	342.8	354.8	6.7	18.6	30.6	42.8	54.9	67.0	79.9	92.4	103.4	115.7	128.0	140.4	153.8
Sat. ...	32.7	34.0	35.3	36.6	37.9	39.3	40.7	41.9	43.1	44.4	45.4	46.4	47.4	48.0	48.6	49.1	49.1
Eng. Date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Je 20	Je 30	Jl 10	Jl 20	Jl 30	Au 9	Au 19	Au 29	S 8	S 18
1884 Mars ...	105.4	107.6	111.9	115.9	120.6	125.4	130.8	136.3	141.8	147.6	153.5	159.7	165.8	172.2	178.7	185.1	191.9
☉'s L. Merc. ...	9.9	25.7	37.3	40.8	34.3	30.1	35.4	48.0	64.3	82.6	101.3	119.5	136.5	150.9	160.2	160.3	152.9
+4 Jup. ...	91.3	92.1	93.2	94.5	96.1	97.9	99.7	101.7	103.8	106.0	108.2	110.4	112.8	115.0	117.3	119.5	121.6
Ven. ...	43.7	54.6	64.6	74.1	82.9	89.9	94.9	97.2	95.5	89.9	84.2	79.6	81.6	83.8	90.2	98.0	107.1
Sat. ...	45.5	46.7	47.9	49.1	50.5	51.9	53.3	54.6	55.9	57.2	58.3	59.4	60.5	61.4	62.2	63.0	63.3
1885 Mars ...	346.3	354.1	1.7	9.2	16.8	24.0	31.4	38.8	45.6	52.8	59.6	66.5	73.3	79.5	86.1	92.4	98.5
☉'s L. Merc. ...	16.1	21.6	17.1	11.0	14.0	25.6	41.3	59.5	78.3	96.9	114.6	130.1	141.3	144.3	137.8	132.9	137.5
+1 Jup. ...	122.5	122.3	122.5	122.8	123.5	124.5	125.8	127.2	128.9	130.8	132.8	134.8	136.9	139.1	141.2	143.4	145.6
Ven. ...	353.0	5.5	17.8	30.1	42.4	53.9	66.8	79.1	91.3	103.5	115.9	128.0	140.1	152.1	164.2	176.2	188.3
Sat. ...	58.6	59.6	60.7	61.8	63.1	64.4	65.7	67.0	68.4	69.8	71.2	72.5	73.8	74.7	75.6	76.5	77.1
1886 Mars ...	134.0	134.0	135.3	137.3	140.0	143.7	148.0	152.7	157.6	163.0	168.6	174.6	180.5	186.8	193.2	199.9	206.5
☉'s L. Merc. ...	0.1	352.7	353.6	3.3	18.5	36.2	55.1	73.9	92.1	108.6	121.2	126.8	122.5	116.0	115.6	128.7	143.4
-1 Jup. ...	155.6	154.5	153.7	152.9	152.8	152.9	153.2	154.1	155.0	156.0	157.5	159.2	161.0	162.9	165.0	167.0	169.1
Ven. ...	313.8	322.3	331.7	342.0	353.1	3.7	14.7	26.1	37.8	49.6	61.3	73.2	85.1	97.1	109.3	121.5	133.6
Sat. ...	71.9	72.8	73.7	74.6	75.8	77.0	78.1	79.4	80.7	82.1	83.5	84.8	86.1	87.2	88.3	89.4	90.3
Eng. Date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19
1887 Mars ...	2.4	9.7	17.3	24.6	31.9	39.0	46.1	53.2	60.2	66.9	73.8	80.8	87.0	93.5	99.9	106.1	112.4
☉'s L. Merc. ...	333.9	343.1	357.3	14.8	33.6	52.7	70.9	86.0	101.1	108.4	105.5	98.3	99.4	109.3	123.9	140.7	158.5
+6 Jup. ...	189.4	188.1	186.8	185.5	184.5	183.6	183.1	182.9	183.0	183.3	184.0	184.9	186.2	187.6	189.4	191.2	193.2
Ven. ...	30.4	42.3	54.4	66.2	77.3	89.1	100.3	111.3	121.8	131.8	141.3	149.7	156.6	161.5	163.9	162.1	156.6
Sat. ...	85.4	86.1	86.8	87.5	88.5	89.6	90.7	92.0	93.3	94.6	95.9	97.2	98.5	99.8	101.0	102.2	103.2
Eng. Date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Je 20	Je 30	Jl 10	Jl 20	Jl 30	Au 9	Au 19	Au 29	S 8	S 18
1888 Mars ...	178.0	174.2	170.2	168.3	169.6	170.5	173.9	175.7	179.4	183.4	188.3	193.6	199.2	205.0	211.1	217.4	224.2
☉'s L. Merc. ...	335.1	351.9	10.9	29.2	48.0	65.5	80.0	88.9	88.3	80.9	79.9	88.2	102.1	118.7	136.8	154.6	171.8
+3 Jup. ...	223.3	222.4	221.3	220.6	218.9	217.5	216.3	215.2	214.4	213.6	213.3	213.4	213.8	214.6	215.7	216.3	218.2
Ven. ...	335.2	347.5	359.7	12.2	24.2	36.5	48.8	60.0	73.1	85.6	97.7	110.0	122.4	134.4	146.9	159.0	171.5
Sat. ...	99.2	99.6	100.0	100.5	101.3	102.2	103.1	104.3	105.5	106.8	108.1	109.4	110.6	112.0	113.3	114.6	115.7
1889 Mars ...	16.9	24.2	31.4	38.6	45.6	52.4	59.4	66.2	73.0	79.6	86.4	92.8	99.4	105.8	112.2	118.7	124.8
☉'s L. Merc. ...	347.1	6.8	24.6	42.4	57.8	68.3	70.5	63.3	60.2	67.1	80.1	96.4	114.5	132.7	150.4	166.9	

mean Sunrise for every ten days from A.D. 1880 to A.D. 1889.

180	190	200	210	220	230	240	250	260		270	280	290	300	310	320	330	340	350	360
174.4 -2.2 O 8 Pur 25	184.3 -2.1 O 18 Aipp 4	194.1 -1.9 O 28 Aipp 14	204.0 -1.7 N 7 Aipp 24	213.8 -1.5 N 17 Kart 4	223.7 -1.2 N 27 Kart 14	233.5 -0.9 D 7 Kart 24	243.4 -0.5 D 17 Marg 5	253.3 -0.1 D 27 Marg 15		263.1 +0.3 Ja 6 Marg 25	273.0 +0.6 Ja 16 Tai 5	282.8 +1.0 Ja 26 F 5 Tai 15	292.7 +1.3 F 5 Tai 25	302.5 +1.6 F 15 Masi 6	312.4 +1.8 F 25 Masi 16	322.2 +2.0 Mr 7 Masi 26	332.1 +2.1 Mr 17 Pang 6	342.0 +2.2 Mr 27 Pang 16	351.8 +2.2 Ap 6 Pang 26
179.0 187.1 350.5 195.7 4.5	185.7 203.3 349.2 208.1 3.3	192.2 216.7 348.0 220.5 2.2	199.0 224.9 347.0 232.8 1.0	205.9 224.0 346.2 245.1 0.4	212.8 216.4 345.6 257.3 359.9	219.9 214.3 344.6 269.6 359.3	226.9 221.5 345.8 281.9 359.3	233.8 234.6 346.6 294.0 359.2	81	241.1 250.6 347.5 305.8 359.1	248.4 268.1 349.5 317.7 359.6	255.8 285.6 350.2 328.9 0.2	263.1 302.7 351.9 340.0 0.6	270.7 318.2 353.8 350.7 1.6	278.2 329.8 356.0 0.9 2.5	285.7 334.3 358.1 10.1 3.5	293.3 328.1 0.3 18.6 4.7	300.9 322.8 2.7 25.1 5.9	308.7 326.8 5.1 29.3 7.2
72.9 197.6 31.5 140.7 18.7	76.9 207.6 30.5 152.8 17.9	80.0 209.8 29.2 164.8 17.2	82.5 203.1 27.8 177.2 16.3	83.9 198.0 26.4 189.5 15.5	84.2 202.9 25.1 202.0 14.7	83.0 214.4 24.1 214.4 13.8	81.6 229.7 23.2 227.0 13.6	77.1 246.8 22.6 239.6 13.2	82	73.4 264.4 22.2 252.1 13.0	70.0 281.5 22.2 264.7 13.3	68.1 297.4 22.6 277.5 13.5	66.9 310.3 23.3 290.1 13.8	67.1 316.2 24.3 302.7 14.5	68.6 312.7 25.6 315.2 15.3	70.8 305.5 27.1 327.8 16.0	74.2 307.1 28.8 340.2 17.1	77.9 317.2 30.7 352.3 18.3	82.0 331.8 32.8 4.7 19.5
191.5 194.3 67.7 218.5 33.9	198.4 189.7 67.8 226.9 33.2	205.3 183.9 67.5 233.3 32.4	212.2 184.9 67.0 238.9 31.6	219.4 194.8 67.2 240.4 30.8	226.4 209.2 65.1 235.6 30.0	233.4 225.6 63.8 229.1 29.2	241.0 243.1 62.5 224.2 28.6	248.4 260.2 61.2 223.4 28.0	83	256.2 276.5 59.9 225.5 27.4	263.4 290.4 58.8 230.8 27.3	270.9 298.3 58.0 238.1 27.3	278.7 297.6 57.4 246.9 27.3	286.4 289.8 57.2 256.4 27.8	294.2 286.9 57.5 266.8 28.3	301.9 296.3 58.0 277.7 28.9	309.9 310.2 58.7 289.0 30.0	317.8 327.1 59.7 300.3 31.0	325.6 345.3 61.1 312.2 32.0
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 7	Mr 17	Mr 27	Ap 6
94.7 167.5 98.5 177.7 49.0	99.9 167.7 99.7 190.2 48.4	104.7 177.3 100.4 202.6 47.8	109.3 190.2 101.0 215.0 47.3	113.2 206.6 101.0 227.7 46.5	116.5 223.8 100.9 240.3 45.7	119.7 240.9 100.4 252.8 44.8	120.9 257.5 99.5 265.5 44.1	121.2 271.5 98.5 278.0 43.4	84	120.5 281.0 97.3 290.5 42.6	118.9 281.8 96.1 302.9 42.3	115.7 274.2 94.2 315.2 42.0	111.8 270.9 93.5 327.5 41.7	108.2 277.3 92.4 339.5 42.1	105.4 290.2 91.6 351.7 42.5	102.6 306.5 90.8 3.5 42.8	101.9 324.4 90.5 15.4 43.5	102.5 343.0 90.5 27.1 44.2	104.2 1.1 90.9 38.1 44.9
O 8	O 18	O 28	N 7	N 17	N 27	D 7	D 17	D 27		Ja 6	Ja 16	Ja 26	F 5	F 15	F 25	Mr 7	Mr 17	Mr 27	Ap 6
205.7 157.0 125.4 127.7 63.8	212.5 169.9 127.2 139.1 63.6	219.5 185.7 128.7 150.0 63.4	226.9 202.9 130.1 161.7 63.2	234.7 220.2 131.2 173.4 62.4	241.4 236.9 132.1 185.6 61.5	248.5 251.7 132.6 197.6 60.6	256.3 262.5 132.8 209.2 59.7	264.0 266.2 132.8 222.2 58.9	85	271.6 260.1 132.4 234.5 58.1	279.5 254.7 131.7 247.0 57.5	287.3 258.2 131.1 259.4 57.0	295.1 269.4 129.5 272.0 56.5	303.1 284.7 128.2 284.5 56.4	310.9 302.2 126.8 297.1 56.4	318.8 320.4 125.5 309.3 56.4	326.8 338.5 124.4 321.9 56.8	334.6 355.8 123.4 334.3 57.2	342.5 10.5 122.7 346.7 57.7
110.5 164.6 150.0 212.1 78.3	116.3 181.7 152.1 224.1 78.2	121.7 199.2 154.2 235.7 78.1	127.2 216.3 156.1 247.3 78.0	132.3 231.9 157.7 258.4 77.4	137.0 241.3 159.3 269.5 76.8	141.3 250.1 160.6 280.1 76.2	145.2 246.8 161.7 289.7 75.5	148.6 239.5 162.5 298.8 74.7	86	151.0 240.0 163.2 306.5 73.9	152.9 249.4 163.5 312.8 73.1	153.3 263.5 163.5 315.6 72.3	152.5 280.3 163.0 316.8 71.6	150.4 298.2 162.2 309.6 71.3	147.0 316.2 161.3 303.1 71.0	143.2 333.4 160.2 299.6 70.7	139.3 348.9 158.8 300.2 71.0	136.3 359.8 157.6 303.9 71.3	134.4 2.4 156.3 310.0 71.6
220.2 178.0 173.5 158.2 91.9	227.0 195.5 175.7 170.5 92.2	234.7 211.7 177.8 182.9 92.4	241.9 225.4 180.0 195.6 92.6	249.2 233.8 182.1 208.1 92.3	256.4 233.2 184.0 220.7 92.0	264.0 225.5 185.9 233.2 91.6	272.1 223.2 187.7 246.0 90.9	279.9 230.0 189.2 258.6 90.1	87	288.0 243.0 190.6 271.3 89.3	295.5 259.1 191.7 283.9 88.5	303.2 276.5 192.6 296.4 87.7	311.2 294.5 193.3 309.0 86.9	318.9 311.5 193.4 321.4 86.3	326.9 327.4 193.4 334.1 85.7	334.8 339.5 193.0 346.4 85.2	342.3 344.4 192.4 358.7 85.2	350.1 339.4 191.4 11.0 85.2	357.7 334.3 190.2 23.2 85.2
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 7	Mr 17	Mr 27	Ap 6
124.8 192.9 197.2 147.3 105.1	130.8 207.4 199.4 148.0 105.6	136.6 216.9 201.4 152.0 106.1	142.3 218.5 203.7 158.7 106.5	147.9 210.9 205.9 167.0 106.5	153.5 207.2 208.1 176.2 106.4	158.6 211.3 210.2 186.5 106.3	163.7 224.3 212.4 197.2 105.8	168.6 239.8 214.4 208.3 105.2	88	173.5 257.0 216.3 219.7 104.6	177.2 274.7 218.0 231.6 103.8	180.9 291.9 219.6 243.5 103.0	183.8 307.7 221.1 255.6 102.1	186.9 320.4 222.2 267.9 101.3	187.2 325.7 223.0 280.1 100.6	186.2 322.2 223.8 292.3 99.9	185.8 315.4 224.1 304.4 99.6	183.6 317.4 224.1 316.7 99.3	179.5 327.9 223.7 329.1 99.1
O 8	O 18	O 28	N 7	N 17	N 27	D 7	D 17	D 27		Ja 6	Ja 16	Ja 26	F 5	F 15	F 25	Mr 7	Mr 17	Mr 27	Ap 6
238.0 199.0 221.6 196.2 117.8	245.0 203.4 223.6 208.6 118.5	252.1 197.9 225.6 221.0 119.2	259.5 191.6 227.7 233.3 119.9	267.0 194.1 229.9 245.4 120.1	274.5 204.8 232.1 257.8 120.3	282.0 219.2 234.4 270.0 120.5	289.7 235.8 236.6 282.2 120.1	297.4 253.4 238.9 294.3 119.7	89	305.2 270.8 241.1 306.0 119.4	312.8 287.1 243.3 318.0 118.6	320.5 300.4 245.5 329.2 117.8	328.2 308.3 247.4 340.0 117.0	336.0 306.7 249.2 350.8 116.2	343.4 299.0 250.8 0.6 115.4	351.1 298.1 252.4 9.8 114.7	358.5 306.9 253.5 17.9 114.2	5.9 321.0 254.5 24.2 113.7	13.3 338.1 255.5 27.6 113.2
137.3 184.6 248.4 141.2 129.8	143.3 176.8 250.4 153.1 131.0	149.4 176.5 251.5 165.3 132.3	155.6 185.1 253.3 177.7 133.6	161.6 199.0 255.2 190.0 133.7	167.4 215.1 257.4 202.5 133.8	173.2 232.2 259.5 214.9 133.9	179.1 249.5 261.8 227.6 133.8	184.7 266.5 264.1 240.1 133.7	90	190.3 280.4 266.4 252.8 133.5	195.9 290.2 268.6 265.4 132.9	201.2 291.2 271.0 278.0 132.3	206.2 283.8 273.4 290.6 131.6	211.3 280.4 275.5 303.2 130.9	215.7 286.5 277.6 315.8 130.1	219.9 299.1 279.7 328.3 129.3	223.5 315.7 281.7 340.7 128.6	226.6 333.7 283.6 353.2 127.9	229.1 352.7 285.6 5.6 127.2
Mag.	P.Phal.	U.Phal.	Hast.	Chit.	Svati.	Visa.	Anur.	Jyesh.	Mula.	P.Ash.	U.Ash.	Srav.	Dan.	Satab.	P.Bhad.	U.Bhad.	Revati.		
133.3	146.7	160.0	173.3	186.7	200.0	213.3	226.7	240.0	253.3	266.7	280.0	293.3	306.7	320.0	333.3	346.7	360.0		

Geocentric (Indian) Longitudes of sun and Major planets at Ujja

Day of S. Yr.	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
☉'s mean L.	357.0	6.9	16.7	26.6	36.4	46.3	56.1	66.0	75.9	85.7	95.6	105.4	115.3	125.1	135.0	144.8	154.7	164.6
Corrn. for do.	+2.1	+2.0	+1.9	+1.7	+1.4	+1.1	+0.8	+0.4	+0.0	-0.3	-0.7	-1.1	-1.4	-1.6	-1.9	-2.0	-2.1	-2.1
English date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19	S 29
Tamil month.	Chit	Chit	Chit	Chit	Vaik	Vaik	Vaik	Ani	Ani	Ani	Adi	Adi	Adi	Avan	Avan	Avan	Pur	Pur
Do. date.	1	11	21	31	10	20	30	9	19	29	7	17	27	6	16	26	5	15
1890 Mars ...	230.0	231.0	230.7	229.6	227.1	224.3	221.2	219.1	218.1	218.6	220.2	222.9	226.5	230.8	236.8	241.2	247.3	253.4
☉'s L. Merc. ...	3.2	21.1	36.9	48.4	51.4	45.1	40.9	46.5	59.1	75.5	93.6	112.2	130.3	147.1	161.3	169.8	169.4	169.4
+8 Jup. ...	286.1	287.3	288.4	289.1	289.5	289.6	289.3	288.7	287.8	286.8	285.4	284.0	282.7	281.9	280.7	279.6	279.1	278.1
Ven. ...	13.1	25.5	37.5	50.0	62.1	74.3	86.2	98.3	110.3	121.9	133.5	145.1	156.6	167.9	179.3	189.9	200.2	210.2
Sat. ...	127.0	126.6	126.5	126.6	127.0	127.4	127.9	128.8	129.7	130.6	131.7	132.8	134.0	135.2	136.5	137.8	139.1	140.4
1891 Mars ...	31.1	38.8	45.8	52.5	59.3	66.1	72.7	79.3	85.7	92.3	98.8	105.2	111.7	118.2	124.6	130.8	137.1	143.4
☉'s L. Merc. ...	14.5	25.7	32.6	27.7	21.6	25.3	36.9	52.8	70.7	89.5	108.6	125.0	140.8	151.4	153.7	146.9	142.6	142.6
+6 Jup. ...	314.7	316.7	318.5	320.2	321.6	322.9	324.1	324.6	324.9	324.9	324.5	323.8	322.8	321.5	320.3	319.0	317.6	316.1
Ven. ...	319.5	331.4	343.2	355.2	7.3	19.2	31.3	43.4	55.5	67.6	79.9	91.8	103.6	116.3	128.6	141.0	153.4	165.7
Sat. ...	140.8	140.4	140.0	139.6	139.8	140.0	140.2	140.8	141.5	142.2	143.2	144.3	145.4	146.6	147.8	149.1	150.4	151.7
Eng. Date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Je 20	Je 30	Jl 10	Jl 20	Jl 30	Au 9	Au 19	Au 29	S 8	S 18	S 28
1892 Mars ...	263.3	268.6	273.7	278.7	283.0	287.1	290.3	294.2	294.2	294.7	293.5	291.0	288.7	286.2	284.6	284.6	286.4	288.1
☉'s L. Merc. ...	13.0	10.4	3.2	4.5	-14.5	29.6	47.5	66.6	85.1	103.1	119.4	131.7	137.0	132.1	125.8	128.4	139.1	150.8
+3 Jup. ...	342.4	344.8	347.1	349.3	351.5	353.5	355.4	357.1	358.5	359.8	0.3	0.8	1.3	1.2	0.7	0.0	359.0	360.3
Ven. ...	44.0	54.6	64.7	73.8	82.2	88.9	93.6	94.8	91.9	85.7	80.1	77.2	78.5	82.7	89.3	97.9	107.2	116.5
Sat. ...	154.3	153.7	153.2	152.7	152.6	152.5	152.5	152.9	153.3	153.8	154.8	155.7	156.6	157.7	158.8	160.0	161.2	162.4
1893 Mars ...	46.3	52.8	59.3	65.8	72.1	78.5	85.0	91.4	97.8	104.1	110.5	116.9	123.3	129.5	136.0	142.3	148.9	155.4
☉'s L. Merc. ...	345.7	344.4	352.7	7.0	24.3	43.0	61.9	79.4	97.4	111.2	118.6	116.3	109.0	109.4	118.6	132.7	149.3	166.9
+1 Jup. ...	9.9	12.3	14.7	17.2	19.5	21.9	24.4	26.5	28.5	30.6	32.4	34.0	35.3	36.4	37.0	37.6	37.7	37.7
Ven. ...	353.6	6.1	18.4	30.7	43.0	55.3	67.5	79.7	91.9	104.1	116.5	128.6	140.6	152.7	164.6	176.8	188.9	201.0
Sat. ...	167.7	166.9	166.2	165.7	165.2	164.2	164.7	164.9	165.1	165.4	166.2	166.9	167.6	168.6	169.6	170.7	171.9	173.1
Eng. Date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19	S 29
1894 Mars ...	286.5	293.9	300.5	307.4	314.1	321.0	327.8	333.9	340.1	345.7	351.4	356.1	0.5	4.0	6.3	7.7	7.5	7.5
☉'s L. Merc. ...	332.6	345.8	2.8	21.5	40.3	58.3	76.6	91.1	99.5	99.2	91.5	90.4	98.8	112.7	129.5	147.1	165.0	182.8
+8 Jup. ...	37.8	40.0	42.3	44.6	46.9	49.3	51.6	54.0	56.3	58.6	60.9	62.9	64.8	66.6	68.3	69.8	70.9	71.9
Ven. ...	314.3	323.0	332.8	343.2	353.8	5.0	16.4	27.6	39.1	51.3	63.0	74.8	86.8	98.7	110.9	123.2	135.5	147.7
Sat. ...	180.4	180.0	179.6	179.1	178.4	177.6	176.8	176.8	176.8	176.8	177.4	178.0	178.5	179.4	180.4	181.4	182.5	183.5
1895 Mars ...	61.6	67.5	73.6	79.6	85.8	91.8	98.0	104.2	110.3	116.7	122.7	129.0	135.4	141.7	148.1	154.6	161.0	167.4
☉'s L. Merc. ...	341.6	358.2	17.0	35.8	53.6	69.0	79.7	81.2	74.1	71.2	78.0	90.8	107.3	125.1	143.3	160.7	176.8	192.9
+5 Jup. ...	65.9	67.4	69.3	71.1	73.2	75.3	77.6	79.9	82.1	84.4	86.7	89.0	91.2	93.4	95.4	97.4	99.2	101.0
Ven. ...	30.9	42.7	54.9	66.3	78.0	89.4	100.4	111.4	121.7	131.7	141.0	149.2	155.8	160.2	161.3	158.4	152.1	145.8
Sat. ...	192.9	192.1	191.3	190.6	190.0	189.4	188.8	188.6	188.4	188.1	188.4	188.7	189.1	189.8	190.7	191.6	192.2	192.9
Eng. Date.	Ap 11	Ap 21	My 1	My 11	My 21	My 31	Je 10	Je 20	Je 30	Jl 10	Jl 20	Jl 30	Au 9	Au 19	Au 29	S 8	S 18	S 28
1896 Mars ...	305.5	313.0	320.6	328.2	335.8	343.1	350.5	357.8	4.8	11.9	18.4	25.0	31.3	37.3	43.2	49.1	53.2	57.3
☉'s L. Merc. ...	353.9	12.1	30.6	46.8	58.6	62.9	58.7	51.9	56.5	68.8	85.0	102.8	121.2	139.1	156.0	170.1	179.1	188.1
+3 Jup. ...	95.3	96.0	97.0	98.3	99.8	101.4	103.2	105.2	107.3	109.4	111.6	113.8	115.9	118.3	120.5	122.8	124.9	127.0
Ven. ...	335.8	348.1	0.3	12.8	24.8	37.1	49.2	61.6	73.8	86.2	98.3	110.6	122.8	135.0	147.5	159.6	172.1	184.6
Sat. ...	205.2	203.7	202.1	200.6	199.9	199.2	198.4	198.1	197.7	197.4	197.6	197.7	198.0	198.6	199.3	200.0	201.0	202.0
1897 Mars ...	78.3	82.7	87.9	93.4	99.0	104.7	110.7	116.6	122.6	128.3	134.6	141.1	147.3	153.6	160.1	166.5	173.0	179.4
☉'s L. Merc. ...	8.2	24.1	37.1	43.5	39.3	33.0	34.7	46.7	62.2	79.9	98.7	116.9	134.5	149.7	160.7	163.6	157.0	150.7
+0 Jup. ...	126.8	126.6	126.6	126.8	127.3	128.3	129.4	130.8	132.5	134.1	136.0	138.1	140.9	142.3	144.5	146.7	148.9	151.1
Ven. ...	15.7	10.5	3.9	1.0	1.3	4.9	11.3	19.3	28.6	38.8	49.4	60.6	72.1	83.4	95.4	107.5	119.6	131.7
Sat. ...	217.0	216.4	215.7	215.0	214.2	213.5	212.7	212.1	211.6	211.1	211.1	211.0	210.9	211.3	211.8	212.1	213.0	213.9
Eng. Date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 2										

mean Sunrise for every ten days from A.D. 1890 to A.D. 1899.

180	190	200	210	220	230	240	250	260		270	280	290	300	310	320	330	340	350	360
174.4	184.3	194.1	204.0	213.8	223.7	233.5	243.4	253.3		263.1	273.0	282.8	292.7	302.5	312.4	322.2	332.1	342.0	351.8
-2.2	-2.1	-1.9	-1.7	-1.5	-1.2	-0.9	-0.5	-0.1		+0.3	+0.6	+1.0	+1.3	+1.6	+1.8	+2.0	+2.1	+2.2	+2.2
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 7,8	17,18	27,28	Ap 6,7
Pur	Aipp	Aipp	Aipp	Kart	Kart	Kart	Marg	Marg		Marg	Tai	Tai	Tai	Masi	Masi	Masi	Pang	Pang	Pang
25	4	14	24	4	14	24	5	15		25	5	15	25	6	16	26	6	16	26
259.6	266.3	273.1	280.2	287.3	294.5	302.0	309.1	316.6	91	324.0	331.2	338.6	345.8	353.1	0.3	7.5	14.6	21.6	28.6
159.6	166.9	180.0	195.8	213.1	230.3	246.7	261.5	272.3		275.3	268.7	263.8	268.0	279.7	295.4	313.0	331.3	349.5	6.4
279.2	280.0	280.6	281.7	283.1	284.6	286.4	288.5	290.6		292.8	295.0	297.4	299.8	302.1	304.5	306.9	309.2	311.6	313.7
219.0	226.6	232.6	235.8	235.3	231.3	225.1	221.1	220.9		224.4	230.5	238.4	247.5	257.5	267.9	279.0	290.3	301.8	313.5
141.6	142.7	143.7	144.7	145.3	145.9	146.5	146.6	146.7		146.8	146.4	146.0	145.5	144.8	144.0	143.2	142.4	141.6	140.9
149.8	156.2	162.3	168.7	174.9	181.2	187.5	193.7	199.9	92	206.2	212.3	218.6	224.6	230.9	237.0	242.9	249.0	254.7	260.6
159.4	175.0	192.1	209.4	226.4	241.9	254.0	259.5	255.4		248.0	249.6	259.5	273.9	290.9	308.9	327.0	344.5	359.7	10.5
315.3	314.4	314.4	314.3	314.7	315.4	316.3	317.6	319.2		321.0	322.8	324.8	327.0	329.3	331.7	334.1	336.5	338.9	341.3
178.3	190.8	203.2	215.8	228.3	240.9	253.4	266.1	278.6		291.1	303.5	315.8	327.9	340.3	352.3	3.9	15.8	27.5	38.4
152.8	153.9	155.0	156.1	157.0	157.8	158.6	158.9	159.2		159.5	159.3	159.0	158.8	158.2	157.5	156.8	156.1	155.3	154.6
O 8	O 18	O 28	N 7	N 17	N 27	D 7	D 17	D 27		Ja 6	Ja 16	Ja 26	F 5	F 15	F 25	Mr 7	Mr 17	Mr 27	Ap 6
292.6	296.9	301.7	307.1	312.8	318.7	325.0	331.1	337.5	93	344.0	350.6	357.0	3.7	10.2	16.9	23.4	29.9	36.4	43.1
170.8	188.4	205.6	221.7	235.2	242.8	241.7	234.3	232.0		239.9	253.2	266.9	284.4	302.2	320.0	336.4	350.1	357.6	349.2
356.4	354.3	353.7	352.5	351.1	351.0	350.8	350.8	351.4		352.1	353.2	354.5	356.1	358.0	359.8	2.0	4.1	6.5	8.8
127.8	139.1	150.3	162.0	173.9	185.9	198.1	210.3	222.7		235.0	247.5	259.9	272.5	285.0	297.6	309.8	322.4	334.8	346.2
163.8	165.0	166.1	167.2	168.2	169.2	170.1	170.6	171.2		171.7	171.7	171.7	171.7	171.2	170.7	170.1	169.4	168.7	167.9
161.8	168.1	174.4	181.1	187.5	194.0	200.6	207.2	213.9	94	220.6	227.4	234.0	241.0	247.7	254.4	261.5	268.5	275.9	282.4
184.7	201.3	215.3	225.8	227.3	220.6	215.9	221.2	232.7		248.7	265.5	283.1	300.8	316.7	329.7	336.3	333.0	326.0	327.4
36.8	35.8	34.8	33.6	32.3	30.9	29.7	28.6	27.8		27.3	27.1	27.4	27.8	28.8	30.0	31.4	32.9	34.7	36.6
212.5	224.6	236.1	247.5	258.6	269.6	279.9	289.7	298.4		305.5	311.0	312.9	311.1	304.7	299.7	298.6	298.2	302.6	309.3
174.3	175.5	176.7	178.0	179.0	180.0	181.0	181.7	182.4		183.1	183.4	183.7	183.9	183.6	183.3	183.0	182.3	181.6	180.8
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 7,8	17,18	27,28	Ap 6,7
3.8	1.0	358.6	357.4	357.0	358.2	0.1	3.1	6.7	95	10.4	15.0	19.8	24.9	30.1	35.5	41.2	46.8	52.9	58.5
197.2	208.6	212.1	206.7	200.3	203.4	214.2	229.1	245.9		263.4	280.8	297.2	310.5	318.2	316.6	308.9	309.0	318.2	332.4
72.4	72.6	72.3	72.3	71.5	70.3	68.0	67.7	66.3		65.1	64.0	63.0	62.3	62.1	62.1	62.5	63.0	64.0	65.2
159.9	172.4	184.8	197.3	209.9	222.0	235.1	247.7	260.4		273.0	285.6	298.2	310.9	323.1	336.0	348.3	0.5	12.7	24.9
184.8	186.0	187.2	188.4	189.5	190.6	191.7	192.6	193.4		194.2	194.6	195.0	195.3	195.2	195.1	195.0	194.5	194.0	193.4
174.2	180.6	187.3	194.0	200.8	207.6	214.5	221.4	228.4	96	235.4	242.5	249.8	257.4	264.3	271.8	279.1	286.6	294.2	301.6
196.2	193.4	185.8	186.0	194.8	208.5	224.8	242.3	259.6		276.1	290.4	299.9	300.8	293.3	290.1	296.6	309.8	326.4	344.5
102.4	103.7	104.5	105.3	105.8	105.8	105.4	104.7	103.8		102.7	101.4	99.9	98.6	97.1	96.4	95.7	95.3	95.1	95.4
144.6	146.3	151.1	158.0	166.2	176.1	186.2	197.4	208.7		220.0	232.1	243.8	255.9	268.2	280.4	292.7	304.9	317.2	329.8
194.8	195.9	197.0	198.2	199.4	200.6	201.8	202.7	203.6		204.6	205.2	205.8	206.3	206.4	206.5	206.5	206.1	205.7	205.3
O 8	O 18	O 28	N 7	N 17	N 27	D 7	D 17	D 27		Ja 6	Ja 16	Ja 26	F 5	F 15	F 25	Mr 7	Mr 17	Mr 27	Ap 6
60.9	63.7	65.3	65.9	65.2	63.4	60.3	56.9	53.9	97	51.7	50.5	51.0	52.4	54.4	57.6	61.2	65.5	70.0	74.8
171.3	168.9	175.7	188.4	204.2	221.4	238.5	255.5	270.4		281.2	284.7	278.5	273.2	277.0	288.5	304.0	321.9	340.4	358.7
128.9	130.6	132.2	133.7	135.0	135.9	136.6	137.0	137.0		136.6	136.1	135.2	134.4	132.9	131.6	130.3	129.1	128.0	127.2
196.8	209.2	221.6	233.9	246.0	258.4	270.6	282.6	294.1		305.4	316.4	327.2	337.9	347.6	356.8	5.2	11.9	16.0	17.0
203.2	204.4	205.6	206.7	207.9	209.1	210.3	211.5	212.8		214.1	214.6	215.2	215.7	216.0	216.2	216.6	216.6	216.7	216.8
186.5	193.2	199.9	206.9	213.8	220.9	228.0	235.3	242.6	98	250.0	257.3	264.9	272.5	280.2	287.7	295.7	303.4	311.1	319.0
156.5	168.1	183.3	200.3	217.7	234.6	250.2	262.5	268.3		264.5	257.4	258.4	268.1	282.4	299.6	317.6	336.0	353.6	9.3
153.3	155.4	157.3	159.2	161.1	162.7	164.3	165.4	166.3		167.0	167.5	167.6	167.3	166.6	165.7	164.7	163.6	162.7	160.9
143.7	155.8	168.0	180.2	192.3	204.6	216.8	229.0	241.3		253.3	265.4	277.7	289.7	302.2	314.7	327.4	339.4	351.5	4.3
214.8	215.9	217.0	218.0	219.2	220.4	221.5	222.6	223.8		224.9	225.8	226.6	227.4	227.8	228.3	228.8	228.8	228.7	228.8
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 8	Mr 18	Mr 28	Ap 7
87.2	91.0	96.4	100.3	103.5	106.0	107.5	107.7	106.8	99	104.7	101.4	97.6	93.8	90.9	89.1	88.1	90.0	92.0	94.9
164.1	181.0	198.5	215.6	231.4	244.8	252.1	250.3	242.2		240.3	249.8	263.2	279.6	297.7	315.5	333.1	348.1	0.8	5.4
176.8	179.1	181.2	183.7	185.6	187.5	189.5	191.2	192.8		194.1	195.5	196.4	197.3	197.6	197.6	197.4	196.8	195.8	194.7
222.4	230.4	236.2	239.4	239.1	234.6	227.7	223.3	222.5		225.0	230.5	238.0	246.7	256.2	266.7	277.4	288.5	300.0	311.5
224.9	225.9	226.9	228.0	229.1	230.2	231.4	232.6	233.8		234.9	235.8	236.8	237.7	238.4	239.0	239.6	239.7	239.9	240.0
200.1	207.0	214.0	221.2	228.3	235.6	243.0	250.5	258.0	1900	265.5	273.3	281.0	288.9	296.8	304.6	312.5	320.5	328.3	336.1
177.3	194.7	211.2	225.8	235.0	236.1	228.8	225.0	230.5		242.7	258.3	275.6	293.7	310.9	327.3	340.3	346.7	343.3	336.2
200.2	202.4	204.6	206.8	209.0	211.2	213.5	215.7	217.7		219.6	221.4	223.2	224.7	225.9	227.0	228.0	228.7	228.4	228.3
178.8	191.3	203.7	216.3	228.8	241.4	254.1	266.5	279.2		291.6	304.0	316.1	328.4	340.6	352.6	4.2	16.1	27.6	38.7
234.8	235.7	236.7	237.7	238.8	239.9	241.1	242.3	243.5		244.6	245.7	246.7	247.7	248.5	249.2	250.1	250.4	250.8	251.4

Mag. P.Phal. U.Phal. Hast. Chit. Svati. Visa. Anur. Jyesh. Mula. P.Ash. U.Ash. Srav. Dan. Satab. P.Bhad. U.Bhad. Revati
 133.3 146.7 160.0 173.3 186.7 200.0 213.3 226.7 240.0 253.3 266.7 280.0 293.3 306.7 320.0 333.3 346.7 360.0

Geocentric (Indian) Longitudes of Sun and Major planets at Ujjain

Day of S. Yr.	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
☉'s Mean L. Corrn. for do. English. date. Tamil month. Do. date.	357.0 +2.1 Ap 12 Chit 1	6.9 +2.0 Ap 22 Chit 11	16.7 +1.9 My 2 Chit 21	26.6 +1.7 My 12 Chit 31	36.4 +1.4 My 22 Vaik 10	46.3 +1.1 Je 1 Vaik 20	56.1 +0.8 Je 11 Vaik 30	66.0 +0.4 Je 21 Ani 9	75.9 +0.0 Jl 1 Ani 19	85.7 -0.3 Jl 11 Ani 29	95.6 -0.7 Jl 21 Adi 7	105.4 -1.1 Jl 31 Adi 17	115.3 -1.4 Au 10 Adi 27	125.1 -1.6 Au 20 Avan 6	135.0 -1.9 Au 30 Avan 16	144.8 -2.0 S 9 Avan 26	154.7 -2.1 S 19 Pur 5	164.7 -2.2 S 29 Pur 15
1900 Mars ..	340.1	347.8	355.5	3.2	10.8	18.2	25.4	32.7	39.8	47.0	53.9	60.9	67.3	73.8	80.4	86.6	92.8	98.8
☉'s L. Merc. ...	335.7	342.4	355.5	12.1	30.7	49.7	68.3	85.9	100.6	109.9	109.9	102.4	100.6	108.2	121.7	138.0	155.5	173.1
+2 Jup. ...	227.8	227.0	226.1	225.0	223.7	222.3	221.0	219.9	218.9	218.1	217.6	217.5	217.8	218.4	219.3	220.3	221.6	223.1
Ven. ...	44.1	54.5	64.5	73.7	81.7	88.0	92.0	92.5	88.6	82.3	76.7	74.9	77.0	81.8	89.0	97.4	106.9	116.6
Sat. ...	251.1	250.8	250.6	250.3	249.6	248.8	248.2	247.4	246.7	246.0	245.4	244.9	244.3	244.2	244.0	243.9	244.3	244.4
Eng. Date.	Ap 13	Ap 23	My 3	My 13	My 23	Je 2	Je 12	Je 22	Jl 2	Jl 12	Jl 22	Au 1	Au 11	Au 21	Au 31	S 10	S 20	S 30
1901 Mars ...	121.4	122.8	124.9	128.0	131.8	136.0	140.7	145.7	151.0	156.5	162.2	168.4	174.4	180.7	187.2	193.8	200.4	207.1
☉'s L. Merc. ...	333.0	349.2	7.3	26.3	45.3	63.1	78.9	89.6	92.5	85.7	81.8	87.5	100.2	116.1	134.0	151.0	169.3	185.1
+0 Jup. ...	259.9	260.3	260.3	260.2	259.9	259.4	257.6	256.1	254.9	253.6	252.5	251.4	250.6	250.0	249.9	250.0	250.4	251.1
Ven. ...	354.1	6.5	18.9	31.2	43.6	55.8	68.1	80.2	92.4	104.6	117.0	128.9	141.2	153.2	165.2	177.1	189.4	201.1
Sat. ...	262.1	262.1	262.0	261.3	261.3	260.8	260.2	259.5	258.9	258.1	257.0	255.9	254.9	255.0	255.0	255.1	255.2	255.5
Eng. Date.	Ap 13	Ap 23	My 3	My 13	My 23	Je 2	Je 12	Je 22	Jl 2	Jl 12	Jl 22	Au 1	Au 11	Au 21	Au 31	S 10	S 20	S 30
1902 Mars ...	356.4	3.9	11.5	18.9	26.2	33.6	40.7	47.8	54.9	61.8	68.5	75.2	81.9	88.4	94.8	101.0	107.3	113.4
☉'s L. Merc. ...	346.3	4.8	23.6	41.8	57.9	69.6	73.9	68.3	62.9	68.8	79.7	95.6	113.5	131.7	149.7	166.1	180.0	188.6
+7 Jup. ...	289.9	291.3	292.4	293.4	294.1	294.5	294.2	293.0	293.0	291.8	290.7	289.5	288.1	286.8	285.7	284.7	284.0	283.7
Ven. ...	313.5	322.5	332.4	342.9	353.8	4.9	16.3	27.8	39.5	51.3	63.2	74.8	87.0	98.9	111.1	123.3	135.5	147.8
Sat. ...	273.0	273.1	273.3	273.3	273.0	272.6	272.2	271.5	270.7	270.1	269.3	268.6	267.7	267.2	266.8	266.3	266.3	266.2
Eng. Date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19	S 29
1903 Mars ...	157.8	155.4	154.7	154.7	156.2	158.5	161.4	165.4	169.9	174.8	179.9	185.6	191.3	197.6	203.9	210.2	217.0	223.9
☉'s L. Merc. ...	0.9	18.8	35.1	48.3	54.4	50.5	43.8	46.7	57.7	73.0	90.8	109.4	127.5	144.9	160.1	170.4	172.9	166.1
+5 Jup. ...	318.4	320.4	322.4	324.3	325.9	327.3	328.4	329.2	329.5	329.7	329.7	329.2	328.3	327.0	325.8	324.5	323.1	321.9
Ven. ...	31.3	43.6	55.2	66.9	78.6	90.0	100.8	111.6	121.9	131.7	140.8	148.8	155.0	158.2	158.9	155.1	148.5	143.3
Sat. ...	283.8	284.1	284.5	284.8	284.7	284.5	284.2	283.6	282.9	282.3	281.5	281.8	280.1	279.4	278.8	278.1	277.9	277.8
Eng. Date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19	S 29
1904 Mars ...	11.2	18.6	25.8	33.1	40.3	47.3	54.2	61.2	67.9	74.5	81.4	88.0	94.5	101.1	107.4	113.7	120.0	126.3
☉'s L. Merc. ...	12.7	26.7	34.7	32.9	25.5	25.9	35.7	50.6	67.9	86.6	105.1	122.9	139.1	151.3	156.7	151.9	145.3	147.5
+2 Jup. ...	346.1	348.5	350.9	353.1	355.3	357.4	359.4	1.1	2.7	4.1	5.2	5.9	6.3	6.3	5.9	5.3	4.4	3.2
Ven. ...	336.3	348.4	0.7	13.1	25.3	37.6	49.3	62.1	74.3	86.7	98.8	111.1	123.3	135.5	148.0	160.1	172.6	185.0
Sat. ...	294.6	295.2	295.7	296.2	296.3	296.2	296.3	296.1	296.0	294.8	293.4	293.0	292.6	291.8	291.1	290.4	290.0	289.5
Eng. Date.	Ap 13	Ap 23	My 3	My 13	My 23	Je 2	Je 12	Je 22	Jl 2	Jl 12	Jl 22	Au 1	Au 11	Au 21	Au 31	S 10	S 20	S 30
1905 Mars ...	211.5	209.4	206.9	203.7	200.4	198.2	197.0	198.1	198.8	201.3	204.6	208.8	213.6	218.7	224.5	230.5	236.5	243.2
☉'s L. Merc. ...	14.8	15.4	8.1	5.1	13.5	27.6	44.8	63.3	82.2	100.5	117.5	131.2	139.2	137.4	129.7	129.2	137.8	151.7
+0 Jup. ...	13.7	16.0	18.4	20.8	23.3	25.7	28.0	30.2	32.4	34.2	36.3	37.9	39.4	40.5	41.4	42.2	42.5	42.3
Ven. ...	23.1	18.9	12.8	8.1	6.4	8.9	14.2	21.7	30.2	39.8	50.0	60.7	71.6	83.0	94.6	106.3	118.0	130.1
Sat. ...	305.6	306.3	307.1	307.7	308.0	308.2	308.5	308.2	308.0	307.6	307.0	306.3	305.6	304.8	304.1	303.2	302.8	302.3
Eng. Date.	Ap 13	Ap 23	My 3	My 13	My 23	Je 2	Je 12	Je 22	Jl 2	Jl 12	Jl 22	Au 1	Au 11	Au 21	Au 31	S 10	S 20	S 30
1906 Mars ...	26.5	33.4	40.4	47.3	54.4	61.0	67.8	74.7	81.1	87.6	94.2	100.6	107.2	113.5	120.0	126.3	132.5	138.9
☉'s L. Merc. ...	348.9	346.5	353.3	6.6	23.3	42.0	60.9	79.5	96.8	111.5	120.4	120.2	112.7	110.9	118.8	132.1	148.5	166.1
+7 Jup. ...	41.6	43.8	45.9	48.2	50.5	52.9	55.2	57.5	59.9	62.2	64.5	66.5	68.5	70.2	71.9	73.6	75.0	76.0
Ven. ...	14.2	26.6	38.8	51.1	63.2	75.2	87.2	99.0	110.8	122.6	134.3	146.0	157.5	168.4	179.4	190.0	200.1	209.3
Sat. ...	316.6	317.5	318.3	319.3	319.7	320.2	320.7	320.6	320.6	320.5	320.0	319.4	318.8	318.0	317.3	316.5	315.8	315.1
Eng. Date.	Ap 12	Ap																

mean Sunrise for every ten days from A.D. 1900 to A.D. 1909.

180	190	200	210	220	230	240	250	260		270	280	290	300	310	320	330	340	350	360
74.4	184.3	194.1	204.0	213.8	223.7	233.5	243.4	253.3		263.1	273.0	282.8	292.7	302.5	312.4	322.2	332.1	342.0	351.8
-2.2	-2.1	-1.9	-1.7	-1.5	-1.2	-0.9	-0.5	-0.1		+0.3	+0.6	+1.0	+1.3	+1.6	+1.8	+2.0	+2.1	+2.2	+2.2
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 8	Mr 18	Mr 28	Ap 7
Pur	Aipp	Aipp	Aipp	Kart	Kart	Kart	Marg	Marg		Marg	Tai	Tai	Tai	Masi	Masi	Masi	Pang	Pang	Pang
25	4	14	24	4	14	24	5	15		25	5	15	25	6	16	26	6	16	26
104.7	110.2	115.6	120.6	125.3	129.7	133.6	136.5	139.0	01	140.5	140.7	139.5	137.4	134.1	130.4	126.6	123.7	121.7	121.2
190.4	205.7	217.1	220.3	215.9	209.3	212.1	222.6	237.3		254.3	271.9	289.3	305.7	319.6	328.0	327.1	319.4	318.4	326.7
225.0	226.9	228.9	231.1	233.3	235.4	237.7	240.0	242.3		244.5	246.7	248.9	250.9	252.8	254.6	256.2	257.6	258.8	259.7
127.9	139.4	150.6	162.5	174.4	186.4	198.6	210.8	223.0		235.3	248.1	260.4	273.0	285.5	298.1	310.5	322.9	335.5	347.9
245.1	246.0	246.8	247.7	248.7	249.7	250.8	252.0	253.2		254.3	255.4	256.5	257.7	258.5	259.4	260.3	260.9	261.4	262.0
214.0	221.1	228.3	235.6	243.0	250.5	258.1	265.7	273.3	02	281.2	289.0	296.7	304.7	312.6	320.6	328.4	336.3	343.9	351.6
198.4	205.4	202.7	195.2	194.7	203.3	217.1	233.2	249.4		268.1	284.8	299.1	309.1	310.7	303.5	299.9	306.3	319.0	335.4
252.4	253.7	255.7	257.2	258.8	260.9	263.1	265.3	267.5		269.8	272.2	274.4	276.7	279.0	281.3	283.4	285.4	287.4	289.1
213.0	224.0	236.4	247.8	258.9	268.4	279.6	289.4	297.9		304.6	309.3	310.4	307.1	301.0	296.0	295.5	296.5	301.5	308.6
255.6	256.2	256.9	257.6	258.6	259.7	260.7	261.8	262.9		264.1	265.3	266.5	267.7	268.7	269.6	270.6	271.3	272.1	272.7
O 10	O 20	O 30	N 9	N 19	N 29	D 9	D 19	D 29		Ja 8	Ja 18	Ja 28	F 7	F 17	F 27	Mr 8,9	18, 19	28, 29	Ap 7, 8
119.6	125.4	131.2	136.7	142.2	147.5	152.5	157.1	161.4	03	165.2	168.7	171.1	172.8	173.2	172.5	170.4	167.0	163.2	160.1
188.1	180.6	178.2	185.3	198.2	214.1	231.2	248.7	265.2		280.1	291.1	294.1	287.8	282.7	287.1	298.8	314.6	332.7	351.1
283.7	284.1	284.8	285.9	287.1	288.5	290.3	292.2	294.4		296.5	298.7	301.0	303.3	305.7	308.1	310.5	312.9	315.3	317.5
160.1	172.6	185.1	197.5	210.1	222.6	235.3	247.9	260.7		273.2	285.8	298.5	311.1	323.5	336.2	348.3	0.6	12.9	24.9
266.3	266.8	267.4	268.0	268.9	269.9	270.8	271.9	273.0		274.1	275.3	276.5	277.7	278.8	279.8	281.0	281.9	282.7	283.5
230.9	238.0	245.2	252.6	259.9	267.5	275.1	282.8	290.6	04	298.4	306.3	314.1	321.8	329.5	337.3	344.9	352.4	0.1	7.5
161.6	166.3	178.0	193.3	210.6	226.6	244.4	260.0	272.4		277.8	274.0	266.5	268.2	278.6	292.8	310.2	328.3	346.3	4.5
320.8	320.0	319.7	319.4	319.3	319.8	320.7	322.0	323.4		324.9	326.7	328.6	330.8	333.1	335.4	337.8	340.2	342.6	345.0
142.4	145.7	150.1	157.6	166.5	176.3	186.6	197.6	208.9		220.4	232.5	244.5	256.7	268.8	281.0	293.0	305.5	317.8	330.2
277.5	277.9	278.2	278.6	279.4	280.1	281.0	282.1	283.2		284.2	285.4	286.6	287.7	288.9	290.1	291.3	292.2	293.2	294.2
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 8	Mr 18	Mr 28	Ap 7
132.3	138.4	143.9	150.4	156.2	161.9	167.6	172.3	178.5	05	183.8	188.8	193.6	197.9	201.9	205.6	208.6	210.8	211.8	211.8
158.0	172.5	189.3	206.8	223.8	236.8	253.3	261.0	259.7		252.0	250.4	258.3	271.8	288.2	306.1	324.2	342.1	358.2	10.7
2.0	0.6	359.3	358.0	357.0	356.3	355.8	355.8	356.1		356.6	357.5	358.8	0.2	2.0	3.8	5.9	8.0	10.3	12.5
197.3	209.7	221.9	234.2	246.5	258.7	270.9	283.1	295.2		306.9	318.5	329.7	340.4	350.9	0.5	8.9	16.2	21.7	23.3
289.2	289.3	289.4	289.5	290.2	290.8	291.4	292.4	293.5		294.5	295.7	296.9	298.1	299.3	300.5	301.7	302.8	303.8	305.0
249.8	256.8	263.9	270.9	278.4	285.8	293.3	300.8	308.3	06	315.9	323.4	330.9	338.3	345.8	353.2	0.9	7.8	15.1	22.1
168.0	185.5	202.8	219.5	233.9	243.8	245.6	238.4	234.1		239.2	251.2	266.7	284.1	301.9	319.8	336.4	349.8	357.1	354.8
41.9	41.1	40.1	38.9	37.5	35.9	34.9	35.7	32.9		32.1	31.8	31.9	32.2	33.0	34.0	35.2	36.7	38.4	40.3
142.1	154.2	166.4	178.8	191.1	203.6	216.3	228.7	241.2		253.9	266.6	279.1	291.9	304.4	316.9	329.4	342.0	354.5	6.7
301.7	301.6	301.4	301.3	301.7	302.2	302.5	303.4	304.2		305.2	306.4	307.6	308.7	309.9	311.1	312.3	313.5	314.7	316.0
O 10	O 20	O 30	N 9	N 19	N 29	D 9	D 19	D 29		Ja 8	Ja 18	Ja 28	F 7	F 17	F 27	Mr 8,9	18, 19	28, 29	Ap 7, 8
145.0	151.3	157.5	163.6	169.9	175.9	182.0	188.1	194.2	07	200.2	206.2	212.2	217.9	223.6	229.3	234.7	240.0	245.2	250.1
183.7	200.7	215.5	226.6	230.0	224.6	218.3	221.6	232.3		247.4	264.5	282.1	299.7	316.3	330.1	338.1	337.4	329.8	328.8
76.7	77.0	77.1	76.8	76.2	75.3	74.2	72.7	71.5		70.4	69.1	68.1	67.2	66.8	66.8	66.9	67.3	68.1	68.9
217.9	224.7	229.2	230.8	228.3	222.7	217.3	215.1	217.1		221.8	229.0	237.7	247.2	257.5	268.4	279.5	290.8	302.5	314.2
314.3	314.0	313.6	313.4	313.6	313.9	314.2	314.9	315.7		316.4	317.4	318.5	319.6	320.9	322.2	323.5	324.7	325.9	327.2
277.1	282.7	288.8	295.2	301.6	308.3	315.0	321.8	328.7	08	335.7	342.7	349.5	356.5	3.4	10.2	17.0	23.8	30.5	37.2
195.6	208.2	215.4	211.3	203.8	204.8	212.8	226.6	243.3		260.7	278.3	294.8	309.5	319.2	320.6	312.2	309.7	316.8	329.7
106.1	107.6	108.6	109.3	109.8	109.9	109.5	109.1	108.4		107.4	106.3	105.1	103.6	102.5	101.4	100.4	99.8	99.5	99.6
179.3	191.8	204.2	216.8	229.3	242.1	254.6	266.9	279.5		291.9	304.5	316.6	328.9	341.1	353.1	4.7	16.4	27.9	38.8
328.0	327.4	326.9	326.3	326.4	326.4	326.4	326.9	327.5		328.0	328.9	329.9	330.9	331.1	332.3	334.5	335.8	337.1	338.4
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 8	Mr 18	Mr 28	Ap 7
156.8	163.3	169.7	176.0	182.5	188.9	195.3	201.8	208.2	09	215.0	221.3	227.9	234.5	241.2	247.7	254.5	261.0	267.6	274.3
197.8	197.5	189.8	187.2	193.9	206.7	222.1	239.5	257.0		273.7	288.9	300.2	303.9	297.9	292.6	296.3	307.9	323.8	341.6
132.3	134.0	135.7	137.3	138.7	139.8	140.6	141.1	141.2		141.1	140.7	139.9	138.7	137.6	136.4	135.1	133.8	132.7	131.8
128.3	139.6	151.2	162.9	174.6	186.8	199.1	211.4	223.6		236.0	248.7	261.0	273.7	286.1	298.7	311.1	323.5	336.1	348.3
342.2	341.4	340.6	339.9	339.6	339.4	339.1	339.5	339.8		340.1	340.9	341.8	342.6	343.7	344.8	346.0	347.3	348.6	349.8
330.5	330.3	331.6	332.8	336.0	339.5	343.8	348.7	353.5	10	358.7	4.2	9.8	15.7	21.4	27.5	33.6	39.7	45.8	51.9
175.6	171.2	175.1	186.5	201.5	218.4	235.6	252.8	268.6		281.1	288.1	283.9	272.7	277.6	287.1	301.6	318.9	337.0	355.8
156.4	158.6	160.6	162.6	164.5	166.1	167.6	168.9	169.9		170.9	171.4	171.5	171.4	170.9	170.2	169.1	168.0	166.7	165.5
213.5	225.5	236.7	248.1	259.0	269.5	279.5	288.9	297.0		303.5	306.9	307.2	303.4	297.0	292.4	291.8	294.8	300.7	308.2
356.7	355.9	355.2	354.3	353.8	353.4	352.8	352.9	352.9		352.9	353.6	354.2	354.8	355.8	356.9	358.0	359.2	0.4	1.6

Geocentric (Indian) Longitudes of Sun and Major planets at Ujjain

Day of S. Yr.	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
☉'s Mean L.	357.0	6.9	16.7	26.6	36.4	46.3	56.1	66.0	75.9	85.7	95.6	105.4	115.3	125.1	135.0	144.8	154.7	164.6
Corrn. for do.	+2.1	+2.0	+1.9	+1.7	+1.4	+1.1	+0.8	+0.4	+0.0	-0.3	-0.7	-1.1	-1.4	-1.6	-1.9	-2.0	-2.1	-2.2
English date.	Ap 13	Ap 23	My 3	My 13	My 23	Je 2	Je 12	Je 22	Jl 2	Jl 12	Jl 22	Au 1	Au 11	Au 21	Au 31	S 10	S 20	S 30
Tamil month.	Chit	Chit	Ohit	Ohit	Vaik	Vaik	Vaik	Ani	Ani	Ani	Adi	Adi	Adi	Avan	Avan	Avan	Pur	Pur
Do. date.	1	11	21	31	10	20	30	9	19	29	7	17	27	6	16	26	5	15
1910 Mars ...	55.6	61.8	68.0	74.3	80.5	86.8	93.0	99.7	105.6	111.9	118.2	124.4	130.8	137.1	143.6	149.9	156.3	162.6
☉'s L. Merc. ...	6.8	24.1	37.9	45.9	44.1	36.6	37.1	46.9	61.8	79.1	97.4	116.0	133.6	149.5	161.6	166.4	161.5	154.8
+6 Jup. ...	164.8	163.7	162.5	161.6	161.1	161.0	161.1	161.3	162.3	163.4	164.6	166.1	167.9	169.7	171.6	173.7	175.7	177.7
Ven. ...	313.6	322.7	332.9	343.6	354.3	364.4	374.5	384.6	394.7	404.8	414.9	425.0	435.1	445.2	455.3	465.4	475.5	485.6
Sat. ...	2.3	3.6	4.9	6.3	7.5	8.6	9.9	10.9	11.8	12.7	13.1	13.6	13.9	13.7	13.6	13.5	12.9	12.2
1911 Mars ...	298.4	305.7	313.0	320.5	327.7	335.1	342.2	349.1	356.2	363.3	370.4	377.5	384.6	391.7	398.8	405.9	413.0	420.1
☉'s L. Merc. ...	16.3	25.6	5.9	18.5	18.7	24.7	38.7	56.1	74.4	93.2	111.4	128.1	141.8	148.9	146.6	139.0	139.0	147.7
+4 Jup. ...	198.8	197.6	196.4	195.2	194.0	192.8	191.9	191.4	191.4	191.4	191.7	192.6	193.5	194.9	196.3	198.0	199.7	201.4
Ven. ...	31.8	43.6	55.4	67.2	78.9	90.3	100.9	111.7	122.0	131.6	140.8	147.9	153.7	156.6	156.0	151.2	145.1	140.0
Sat. ...	14.3	15.7	17.1	18.5	19.8	21.1	22.4	23.7	25.2	26.5	26.9	27.2	27.6	27.7	27.9	28.0	27.5	27.0
Eng. Date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19	S 29
1912 Mars ...	70.9	76.5	82.1	87.9	93.7	99.5	105.6	111.5	117.7	123.8	130.1	136.3	142.4	148.9	155.4	161.8	168.3	174.8
☉'s L. Merc. ...	8.3	1.1	357.1	3.1	15.9	32.8	51.1	69.1	88.8	106.1	120.8	130.2	130.8	123.2	120.8	127.7	140.9	157.7
+1 Jup. ...	232.4	231.0	230.6	229.9	228.6	227.3	225.9	224.8	223.7	222.9	222.2	222.0	222.0	222.4	223.3	224.4	225.4	226.4
Ven. ...	336.8	349.1	361.4	373.6	385.8	398.1	410.3	422.5	434.8	447.1	459.4	471.7	484.0	496.3	508.6	520.9	533.2	545.5
Sat. ...	26.9	28.2	29.5	30.8	32.1	33.4	34.8	36.1	37.3	38.5	39.4	40.2	41.2	41.6	42.1	42.5	42.4	42.2
1913 Mars ...	316.3	323.9	331.7	339.3	347.0	354.5	362.1	369.6	377.1	384.6	392.1	399.6	407.1	414.6	422.1	429.6	437.1	444.6
☉'s L. Merc. ...	338.9	342.2	353.7	365.2	376.7	388.2	399.7	411.2	422.7	434.2	445.7	457.2	468.7	480.2	491.7	503.2	514.7	526.2
-1 Jup. ...	264.0	264.6	264.8	264.7	264.4	263.6	262.6	261.4	260.1	258.8	257.5	256.3	255.5	254.7	254.4	254.4	254.6	255.5
Ven. ...	19.4	14.7	9.1	4.3	4.2	7.6	13.5	21.2	30.1	39.9	50.3	60.8	71.9	83.2	94.9	106.6	118.5	130.4
Sat. ...	39.5	40.7	41.9	43.1	44.5	45.9	47.3	48.6	49.9	51.3	52.3	53.4	54.4	55.2	55.9	56.4	56.7	56.6
Eng. Date.	Ap 13	Ap 23	My 3	My 13	My 23	Je 2	Je 12	Je 22	Jl 2	Jl 12	Jl 22	Au 1	Au 11	Au 21	Au 31	S 10	S 20	S 30
1914 Mars ...	88.7	93.0	97.9	103.0	108.4	114.1	119.4	125.1	131.0	137.0	143.0	149.1	155.5	161.7	168.3	174.8	181.4	188.0
☉'s L. Merc. ...	333.3	348.4	363.5	378.6	393.7	408.8	423.9	439.0	454.1	469.2	484.3	499.4	514.5	529.6	544.7	559.8	574.9	590.0
+6 Jup. ...	293.9	295.4	296.7	297.7	298.9	299.0	299.2	298.6	298.1	297.2	296.2	294.9	293.6	292.4	291.2	290.1	289.2	288.3
Ven. ...	14.7	27.1	39.5	51.6	63.7	75.7	87.6	99.5	111.1	123.1	134.7	146.3	157.6	168.9	179.7	190.1	199.8	209.5
Sat. ...	52.4	53.5	54.8	55.9	57.2	58.5	59.9	61.2	62.5	63.9	64.8	65.6	66.6	67.9	69.1	70.3	70.7	71.1
1915 Mars ...	333.7	341.6	349.3	356.8	364.3	371.8	379.3	386.8	394.3	401.8	409.3	416.8	424.3	431.8	439.3	446.8	454.3	461.8
☉'s L. Merc. ...	344.3	1.9	20.8	39.2	56.1	69.9	76.5	73.1	66.1	68.3	78.5	93.3	111.8	129.0	147.0	164.1	179.1	189.9
+4 Jup. ...	322.2	324.4	326.4	328.4	330.0	331.6	332.8	333.7	334.4	334.8	334.9	334.4	333.7	332.7	331.5	330.2	328.8	327.4
Ven. ...	320.7	332.5	344.6	356.8	368.9	381.1	393.3	405.5	417.7	429.9	442.1	454.3	466.5	478.7	490.9	503.1	515.3	527.5
Sat. ...	65.7	66.7	67.6	68.6	69.8	71.1	72.3	73.7	75.1	76.4	77.7	79.0	80.3	81.3	82.4	83.5	84.2	84.8
Eng. Date.	Ap 12	Ap 22	My 2	My 12	My 22	Je 1	Je 11	Je 21	Jl 1	Jl 11	Jl 21	Jl 31	Au 10	Au 20	Au 30	S 9	S 19	S 29
1916 Mars ...	110.8	113.2	116.4	120.1	124.4	129.2	134.0	139.3	145.3	151.0	156.7	162.6	168.7	175.1	181.6	188.2	194.7	201.2
☉'s L. Merc. ...	357.6	14.9	33.4	47.8	56.6	55.8	48.3	47.6	56.5	71.1	88.3	106.4	124.8	142.5	158.4	170.5	175.8	171.1
+1 Jup. ...	349.9	352.3	354.7	357.1	359.3	361.5	363.7	365.9	368.1	370.3	372.5	374.7	376.9	379.1	381.3	383.5	385.7	387.9
Ven. ...	34.4	54.8	64.3	73.0	80.0	85.5	88.4	86.7	82.9	75.3	70.7	71.1	74.5	80.3	88.3	97.1	107.2	117.3
Sat. ...	79.2	79.9	80.7	81.3	82.4	83.6	84.8	86.1	87.4	88.7	90.1	91.5	92.8	94.0	95.1	96.4	97.3	98.2
Eng. Date.	Ap 13	Ap 23	My 3	My 13	My 23	Je 2	Je 12	Je 22	Jl 2	Jl 12	Jl 22	Au 1	Au 11	Au 21	Au 31	S 10	S 20	S 30
1917 Mars ...	350.4	358.1	365.8	373.5	381.2	388.9	396.6	404.3	412.0	419.7	427.4	435.1	442.8	450.5	458.2	465.9	473.6	481.3
☉'s L. Merc. ...	12.2	27.2	36.6	36.9	29.3	27.8	35.8	50.1	67.0	85.6	104.0	122.1	138.8	151.9	158.7	156.0	148.5	148.8
+8 Jup. ...	17.7	20.1	22.5	24.9	27.3	29.7	32.0	34.4	36.5	38.6	40.5	42.2	43.8	45.0	46.1	46.8	47.2	47.7
Ven. ...	356.5	8.8	21.2	33.5	45.9	58.1	70.2	82.5	94.4	106.9	119.1	131.2	143.3	155.3	167.3	179.1	191.4	203.3
Sat. ...	92.9	93.4	93.9	94.5	95.4	96.3	97.4	98.6	99.8	101.1	102.4	103.7						

Mean Sunrise for every ten days from A.D. 1910 to A.D. 1919.

180	190	200	210	220	230	240	250	260		270	280	290	300	310	320	330	340	350	360
174.4 -2.2 O 10 Pur 25	184.3 -2.1 O 20 Aipp 4	194.1 -1.9 O 30 Aipp 14	204.0 -1.7 N 9 Aipp 24	213.8 -1.5 N 19 Kart 4	223.7 -1.2 N 29 Kart 14	233.5 -0.9 D 9 Kart 24	243.4 -0.5 D 19 Marg 5	253.3 -0.1 D 29 Marg 15		263.1 +0.3 Ja 8 Marg 25	273.0 +0.6 Ja 18 Tai 5	282.8 +1.0 Ja 28 Tai 15	292.7 +1.3 F 7 Tai 25	302.5 +1.6 F 17 Masi 6	312.4 +1.8 F 27 Masi 16	322.2 +2.0 Mr 8,9 Masi 26	332.1 +2.1 18,19 Pang 6	342.0 +2.2 28,29 Pang 16	351.8 +2.2 Ap 7,8 Pang 26
169.4 157.6 180.1 61.0 11.5	176.0 168.1 182.3 173.5 10.6	182.5 182.6 184.4 186.0 9.8	189.0 199.3 186.6 198.6 9.0	195.7 216.7 188.8 211.0 8.3	202.4 233.9 190.9 223.7 7.7	209.3 249.7 192.8 236.2 7.1	216.1 263.0 194.6 248.9 6.8	223.0 270.5 196.3 261.5 6.6	11	229.9 269.0 197.9 274.1 6.4	236.8 260.8 199.4 286.8 6.8	243.9 260.0 200.3 299.3 7.1	250.9 268.4 201.2 311.9 7.6	258.2 282.1 201.6 324.3 8.4	265.3 298.7 201.7 336.9 9.3	272.6 316.9 201.6 349.2 10.2	280.0 335.1 201.3 1.5 11.4	287.2 353.1 200.5 13.8 12.6	294.5 9.1 199.5 25.8 13.8
44.8 61.7 103.8 139.9 26.7	45.7 178.3 205.8 142.4 25.9	44.9 195.8 207.9 149.4 25.1	42.7 213.8 210.2 157.1 24.4	40.1 229.5 212.4 166.2 23.6	37.0 243.6 214.6 176.2 22.9	34.5 252.9 216.8 186.5 22.1	32.8 254.2 219.0 197.7 21.6	32.0 246.8 221.1 209.2 21.1	12	32.7 243.0 223.2 220.7 20.7	34.4 248.8 225.0 232.2 20.8	37.0 261.3 226.7 244.8 20.9	40.3 277.1 228.3 257.0 20.9	44.0 294.5 229.8 269.1 21.6	48.1 312.7 230.9 281.5 22.2	52.1 330.3 231.8 293.5 23.0	57.6 347.2 232.4 305.8 24.0	62.9 0.6 232.7 318.2 25.2	68.1 7.8 232.7 330.7 26.2
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 8	Mr 18	Mr 28	Ap 7
181.4 174.4 228.6 197.8 42.1	188.2 192.0 230.4 210.1 41.2	195.0 208.6 232.4 222.4 40.2	201.8 224.0 234.5 234.7 39.2	208.6 235.2 236.7 247.0 38.6	216.1 239.1 238.9 259.4 38.1	223.1 233.6 241.1 271.4 37.6	230.2 227.3 243.3 283.5 36.9	237.4 230.2 245.7 295.4 36.3	13	244.5 240.8 247.9 307.2 35.5	251.9 255.7 250.1 319.4 35.3	259.3 272.9 252.3 329.8 35.2	266.8 290.8 254.3 340.5 34.9	274.3 308.4 256.3 350.6 35.4	281.9 325.1 258.2 0.2 35.8	289.5 339.5 259.9 8.4 36.2	297.1 348.3 261.5 14.9 37.0	304.9 348.0 262.8 19.6 37.9	312.6 340.4 263.6 20.6 38.9
78.1 188.0 256.2 142.4 57.0	82.5 204.2 257.6 154.7 56.6	86.3 216.9 259.2 166.9 56.1	89.4 223.5 260.8 179.4 55.7	91.7 221.1 262.5 191.7 55.9	92.7 213.2 264.5 204.1 54.1	92.9 212.8 266.6 216.8 53.3	91.4 221.3 268.0 229.2 52.5	88.8 234.8 271.0 241.7 51.8	14	85.5 251.4 273.3 254.4 51.0	81.7 269.1 275.6 267.1 50.6	78.5 286.7 278.0 279.6 50.1	76.0 303.6 280.3 292.4 49.7	74.9 318.5 282.7 305.3 49.7	75.3 328.9 284.9 318.2 49.8	76.9 331.2 287.1 329.9 49.8	79.3 324.4 289.2 342.5 50.5	82.5 320.5 291.2 355.0 51.2	86.1 326.2 293.2 7.2 51.9
O 10	O 20	O 30	N 9	N 19	N 29	D 9	D 19	D 29		Ja 8	Ja 18	Ja 28	F 7	F 17	F 27	Mr 8,9	18,19	28,29	Ap 7,8
194.9 198.5 213.5 217.1 71.5	201.7 207.1 288.8 223.8 71.3	208.6 206.2 289.3 227.5 71.2	215.6 198.6 290.1 228.7 71.0	222.8 196.5 291.3 224.6 70.3	230.1 203.6 292.6 218.5 69.5	237.4 216.4 294.2 213.6 68.9	244.7 232.2 295.9 212.6 68.1	252.1 249.7 298.2 215.4 67.4	15	259.7 267.1 300.3 220.9 66.5	267.3 284.0 302.4 228.3 65.9	275.1 299.2 304.8 237.2 65.2	282.7 310.3 307.1 247.1 64.5	290.4 313.8 309.4 257.6 64.4	298.3 307.5 311.8 268.5 64.1	306.2 301.7 314.3 279.6 64.0	314.1 306.7 316.7 291.1 64.4	321.9 318.6 319.1 302.8 64.9	329.8 334.6 321.4 314.7 65.2
98.4 91.7 123.3 7.9 85.4	103.8 185.1 325.6 192.4 85.5	108.9 180.3 324.9 205.0 85.7	113.4 184.8 324.4 217.5 85.8	117.9 196.4 324.3 229.9 85.3	121.8 211.7 324.7 242.5 84.9	124.9 228.6 325.3 255.5 84.4	127.1 245.9 326.3 267.7 83.6	128.4 262.9 327.6 280.1 82.8	16	128.6 278.6 329.2 292.6 82.0	127.5 291.2 329.8 304.9 81.1	125.3 296.8 332.7 317.2 80.3	122.0 292.8 334.8 329.3 79.4	118.0 294.4 337.0 341.5 79.1	114.2 296.2 339.2 353.5 78.7	111.4 306.5 341.6 5.1 78.4	109.7 321.2 344.0 17.0 78.5	109.2 338.1 346.4 23.1 78.5	110.1 343.3 348.8 39.2 78.6
O 9	O 19	O 29	N 8	N 18	N 28	D 8	D 18	D 28		Ja 7	Ja 17	Ja 27	F 6	F 16	F 26	Mr 8	Mr 18	Mr 28	Ap 7
208.5 164.5 7.8 128.6 98.9	215.6 166.7 6.4 139.9 99.3	222.6 176.6 5.0 151.5 99.7	229.9 191.1 3.8 163.2 100.1	237.1 207.5 2.6 175.3 99.8	244.6 224.9 1.7 187.3 99.6	252.0 242.0 1.0 199.5 99.4	259.6 258.2 0.9 211.7 98.7	267.2 271.7 0.9 224.0 98.0	17	275.0 279.5 1.4 236.5 97.4	282.9 278.4 2.1 249.2 96.6	290.6 270.8 3.2 261.5 96.9	298.6 267.3 4.4 274.2 95.0	306.4 277.2 6.1 287.0 94.3	314.1 290.9 7.9 299.0 93.7	322.1 307.4 9.7 311.6 93.0	330.0 323.3 11.9 324.1 92.9	338.0 342.1 14.1 336.6 92.7	345.6 0.5 16.4 349.0 92.5
O 10	O 20	O 30	N 9	N 19	N 29	D 9	D 19	D 29		Ja 8	Ja 18	Ja 28	F 7	F 17	F 27	Mr 8,9	18,19	28,29	Ap 7,8
114.1 157.8 47.0 215.0 111.9	119.9 171.9 46.4 226.7 112.6	125.6 188.3 45.5 237.8 113.2	131.0 205.6 44.3 249.2 113.8	136.1 222.9 43.1 260.1 113.9	141.2 239.4 36.7 270.5 113.9	145.8 253.3 40.3 280.2 114.0	149.9 262.5 39.2 289.2 113.9	153.6 263.0 38.1 296.8 113.1	18	156.4 255.6 37.3 302.2 112.5	158.8 252.3 36.9 304.8 111.7	159.9 258.5 36.7 303.7 110.9	160.2 271.3 37.0 298.4 110.2	158.6 287.4 37.6 292.1 109.4	155.8 305.1 38.5 289.1 108.6	152.6 323.2 39.6 290.3 107.8	148.4 341.1 40.9 294.1 107.4	145.2 357.9 42.5 300.8 106.9	142.4 11.3 44.3 308.7 106.6
224.4 167.3 80.9 161.5 124.4	231.4 184.7 81.1 174.0 125.1	238.6 202.1 81.8 186.4 125.9	246.0 218.7 81.6 198.7 126.7	253.5 233.7 81.2 211.5 127.1	260.9 244.6 80.3 224.1 127.3	268.7 248.1 79.0 236.7 127.7	276.3 242.0 78.1 249.4 127.7	283.9 236.4 76.8 262.0 127.8	19	291.8 239.7 75.6 274.7 127.9	299.6 250.8 74.3 287.3 126.3	307.5 265.9 73.2 299.6 125.6	315.0 283.2 72.2 312.4 124.9	323.2 301.3 71.6 325.0 124.0	331.0 319.0 71.3 327.8 123.2	338.8 334.8 71.3 349.7 122.4	346.6 350.2 71.5 2.0 122.4	354.2 358.9 72.3 14.3 120.5	1.4 358.6 73.3 26.2 119.6
127.5 180.9 110.0 138.2 135.4	133.5 198.0 111.3 141.9 136.3	139.5 213.9 112.5 148.5 137.4	145.2 226.3 113.4 156.8 138.4	151.0 232.3 114.1 165.8 139.2	156.5 228.9 114.4 176.1 139.9	162.0 221.7 114.4 186.9 140.6	167.1 222.1 114.1 198.0 140.9	172.2 231.1 113.3 209.3 141.1	20	177.2 245.1 112.4 221.0 141.3	181.7 261.8 111.3 233.0 140.8	185.6 279.4 109.9 245.3 140.4	189.3 298.0 108.6 257.5 140.1	192.3 314.1 107.4 269.6 139.4	194.4 328.9 106.2 282.0 138.6	195.7 339.1 105.2 294.1 137.9	195.6 341.2 104.4 306.3 137.1	194.3 334.4 104.0 318.8 136.4	191.7 331.7 103.9 331.2 135.6

Mag. P.Phal. U.Phal. Hasta. Chit. Svati. Visa. Anur. Jyesh. Mula. P.Ash. U.Ash. Srav. Dan. Satab. P.Bhad. U.Bhad. Revati.
 133.3 146.7 160.0 173.3 186.7 200.0 213.3 226.7 240.0 253.3 266.7 280.0 293.3 306.7 320.0 333.3 346.7 360.0

TABLE XIX:—Ghatikas and Palas (Naligais and Vinadis) as Fractions of a day.

N.B.—The same table will serve for minutes and seconds as fractions of an Hour or a Degree.

Ghatikas.					Palas.	Ghatikas.					Palas.	Ghatikas.					Palas.	Ghatikas.			
0	1	2	3	4		5	6	7	8	9		10	11	12	13	14		15	16	17	18
...	0167	0333	0500	0667		0833	1000	1167	1333	1500		01667	1833	2000	2167	2333		02500	2667	2833	3000
0003	0169	0336	0503	0669		0836	1003	1169	1336	1503		01669	1836	2003	2169	2336		02503	2669	2836	3003
0005	0172	0339	0505	0672		0839	1005	1172	1339	1505		01672	1839	2005	2172	2339		02505	2672	2839	3005
0008	0175	0342	0508	0675		0842	1008	1175	1342	1508		01675	1842	2008	2175	2342		02508	2675	2842	3008
0011	0178	0344	0511	0678		0844	1011	1178	1344	1511		01678	1844	2011	2178	2344		02511	2678	2844	3011
0014	0180	0347	0514	0680		0847	1014	1180	1347	1514		01680	1847	2014	2180	2347		02514	2680	2847	3014
0017	0183	0350	0517	0683		0850	1017	1183	1350	1517		01683	1850	2017	2183	2350		02517	2683	2850	3017
0019	0186	0353	0519	0686		0853	1019	1186	1353	1519		01686	1853	2019	2186	2353		02519	2686	2853	3019
0022	0189	0355	0522	0689		0855	1022	1189	1355	1522		01689	1855	2022	2189	2355		02522	2689	2855	3022
0025	0192	0358	0525	0692		0858	1025	1192	1358	1525		01692	1858	2025	2192	2358		02525	2692	2858	3025
0028	0194	0361	0528	0694		0861	1028	1194	1361	1528		01694	1861	2028	2194	2361		02528	2694	2861	3028
0030	0197	0364	0530	0697		0864	1030	1197	1364	1530		01697	1864	2030	2197	2364		02530	2697	2864	3030
0033	0200	0367	0533	0700		0867	1033	1200	1367	1533		01700	1867	2033	2200	2367		02533	2700	2867	3033
0036	0203	0369	0536	0703		0869	1036	1203	1369	1536		01702	1869	2036	2203	2369		02536	2703	2869	3036
0039	0205	0372	0539	0705		0872	1039	1205	1372	1539		01705	1872	2039	2205	2372		02539	2705	2872	3039
0042	0208	0375	0542	0708		0875	1042	1208	1375	1542		01708	1875	2042	2208	2375		02542	2708	2875	3042
0044	0211	0378	0544	0711		0878	1044	1211	1378	1544		01711	1878	2044	2211	2378		02544	2711	2878	3044
0047	0214	0380	0547	0714		0880	1047	1214	1380	1547		01714	1880	2047	2214	2380		02547	2714	2880	3047
0050	0217	0383	0550	0717		0883	1050	1217	1383	1550		01717	1883	2050	2217	2383		02550	2717	2883	3050
0053	0219	0386	0553	0719		0886	1053	1219	1386	1553		01719	1886	2053	2219	2386		02553	2719	2886	3053
0055	0222	0389	0555	0722		0889	1055	1222	1389	1555		01722	1889	2055	2222	2389		02555	2722	2889	3055
0058	0225	0392	0558	0725		0892	1058	1225	1392	1558		01725	1892	2058	2225	2392		02558	2725	2892	3058
0061	0228	0394	0561	0728		0894	1061	1228	1394	1561		01728	1894	2061	2228	2394		02561	2728	2894	3061
0064	0230	0397	0564	0730		0897	1064	1230	1397	1564		01730	1897	2064	2230	2397		02564	2730	2897	3064
0067	0233	0400	0567	0733		0900	1067	1233	1400	1567		01733	1900	2067	2233	2400		02567	2733	2900	3067
0069	0236	0403	0569	0736		0903	1069	1236	1403	1569		01736	1903	2069	2236	2403		02569	2736	2903	3069
0072	0239	0405	0572	0739		0905	1072	1239	1405	1572		01739	1905	2072	2239	2405		02572	2739	2905	3072
0075	0242	0408	0575	0742		0908	1075	1242	1408	1575		01742	1908	2075	2242	2408		02575	2742	2908	3075
0078	0244	0411	0578	0744		0911	1078	1244	1411	1578		01744	1911	2078	2244	2411		02578	2744	2911	3078
0080	0247	0414	0580	0747		0914	1080	1247	1414	1580		01747	1914	2080	2247	2414		02580	2747	2914	3080
0083	0250	0417	0583	0750		0917	1083	1250	1417	1583		01750	1917	2083	2250	2417		02583	2750	2917	3083
0086	0253	0419	0586	0753		0919	1086	1253	1419	1586		01753	1919	2086	2253	2419		02586	2753	2919	3086
0089	0255	0422	0589	0755		0922	1089	1255	1422	1589		01755	1922	2089	2255	2422		02589	2755	2922	3089
0092	0258	0425	0592	0758		0925	1092	1258	1425	1592		01758	1925	2092	2258	2425		02592	2758	2925	3092
0094	0261	0428	0594	0761		0928	1094	1261	1428	1594		01761	1928	2094	2261	2428		02594	2761	2928	3094
0097	0264	0430	0597	0764		0930	1097	1264	1430	1597		01764	1930	2097	2264	2430		02597	2764	2930	3097
0100	0267	0433	0600	0767		0933	1100	1267	1433	1600		01767	1933	2100	2267	2433		02600	2767	2933	3100
0103	0269	0436	0603	0769		0936	1103	1269	1436	1603		01769	1936	2103	2269	2436		02603	2769	2936	3103
0105	0272	0439	0605	0772		0939	1105	1272	1439	1605		01772	1939	2105	2272	2439		02605	2772	2939	3105
0108	0275	0442	0608	0775		0942	1108	1275	1442	1608		01775	1942	2108	2275	2442		02608	2775	2942	3108
0111	0278	0444	0611	0778		0944	1111	1278	1444	1611		01778	1944	2111	2278	2444		02611	2778	2944	3111
0114	0280	0447	0614	0780		0947	1114	1280	1447	1614		01780	1947	2114	2280	2447		02614	2780	2947	3114
0117	0283	0450	0617	0783		0950	1117	1283	1450	1617		01783	1950	2117	2283	2450		02617	2783	2950	3117
0119	0286	0453	0619	0786		0953	1119	1286	1453	1619		01786	1953	2119	2286	2453		02619	2786	2953	3119
0122	0289	0455	0622	0789		0955	1122	1289	1455	1622		01789	1955	2122	2289	2455		02622	2789	2955	3122
0125	0292	0458	0625	0792		0958	1125	1292	1458	1625		01792	1958	2125	2292	2458		02625	2792	2958	3125
0128	0294	0461	0628	0794		0961	1128	1294	1461	1628		01794	1961	2128	2294	2461		02628	2794	2961	3128
0130	0297	0464	0630	0797		0964	1130	1297	1464	1630		01797	1964	2130	2297	2464		02630	2797	2964	3130
0133	0300	0467	0633	0800		0967	1133	1300	1467	1633		01800	1967	2133	2300	2467		02633	2800	2967	3133
0136	0303	0469	0636	0803		0969	1136	1303	1470	1636		01803	1969	2136	2303	2469		02636	2803	2969	3136
0139	0305	0472	0639	0805		0972	1139	1305	1472	1639		01805	1972	2139	2305	2472		02639	2805	2972	3139
0142	0308	0475	0642	0808		0975	1142	1308	1475	1642		01808	1975	2142	2308	2475		02642	2808	2975	3142
0144	0311	0478	0644	0811		0978	1144	1311	1478	1644		01811	1978	2144	2311	2478		02644	2811	2978	3144
0147	0314	0480	0647	0814		0980	1147	1314	1480	1647		01814	1980	2147	2314	2480		02647	2814	2980	3147
0150	0317	0483	0650	0817		0983	1150	1317	1483	1650		01817	1983	2150	2317	2483		02650	2817	2983	3150
0153	0319	0486	0653	0819		0986	1153	1319	1486	1653		01819	1986	2153	2319	2486		02653	2819	2986	3153
0155	0322	0489	0655	0822		0989	1155	1322	1489	1655		01822	1989	2155	2322	2489		02655	2822	2989	3155
0158	0325	0492	0658	0825		0992	1158	1325	1492	1658		01825	1992	2158	2325	2492		02658	2825	2992	3158
0161	0328	0494	0661	0828		0994	1161	1328	1494	1661		01828	1994	2161	2328	2494		02661	2828	2994	3161
0164	0330	0497	0664	0830		0997	1164	1330	1497	1664		01830	1997	2164	2330	2497		02664	2830	2997	3164

TABLE XIX:—Ghatikas and Palas (Naligais and Vinadis) as Fractions of a day.—contd.**N.B.—**The same table will serve for minutes and seconds as fractions of an **Hour** or a **Degree**.

Ghatikas.					Palas.	Ghatikas.					Palas.	Ghatikas.					Palas.	Ghatikas.				
20	21	22	23	24		25	26	27	28	29		30	31	32	33	34		35	36	37	38	39
3333	3500	3667	3833	4000	0	4167	4333	4500	4667	4833	0	5000	5167	5333	5500	5667	0	5833	6000	6167	6333	6500
3336	3503	3669	3836	4003	1	4169	4336	4503	4669	4836	1	5003	5169	5336	5503	5669	1	5836	6003	6169	6336	6503
3339	3505	3672	3839	4005	2	4172	4339	4505	4672	4839	2	5005	5172	5339	5505	5672	2	5839	6005	6172	6339	6505
3342	3508	3675	3842	4008	3	4175	4342	4508	4675	4842	3	5008	5175	5342	5508	5675	3	5842	6008	6175	6342	6508
3344	3511	3678	3844	4011	4	4178	4344	4511	4678	4844	4	5011	5178	5344	5511	5678	4	5844	6011	6178	6344	6511
3347	3514	3680	3847	4014	5	4180	4347	4514	4680	4847	5	5014	5180	5347	5514	5680	5	5847	6014	6180	6347	6514
3350	3517	3683	3850	4017	6	4183	4350	4517	4683	4850	6	5017	5183	5350	5517	5683	6	5850	6017	6183	6350	6517
3353	3519	3686	3853	4019	7	4186	4353	4519	4686	4853	7	5019	5186	5353	5519	5686	7	5853	6019	6186	6353	6519
3355	3522	3689	3855	4022	8	4189	4355	4522	4689	4855	8	5022	5189	5355	5522	5689	8	5855	6022	6189	6355	6522
3358	3525	3692	3858	4025	9	4192	4358	4525	4692	4858	9	5025	5192	5358	5525	5692	9	5858	6025	6192	6358	6525
3361	3528	3694	3861	4028	10	4194	4361	4528	4694	4861	10	5028	5194	5361	5528	5694	10	5861	6028	6194	6361	6528
3364	3530	3697	3864	4030	11	4197	4364	4530	4697	4864	11	5030	5197	5364	5530	5697	11	5864	6030	6197	6364	6530
3367	3533	3700	3867	4033	12	4200	4367	4533	4700	4867	12	5033	5200	5367	5533	5700	12	5867	6033	6200	6367	6533
3369	3536	3703	3869	4036	13	4203	4369	4536	4703	4869	13	5036	5203	5369	5536	5703	13	5869	6036	6203	6369	6536
3372	3539	3705	3872	4039	14	4205	4372	4539	4705	4872	14	5039	5205	5372	5539	5705	14	5872	6039	6205	6372	6539
3375	3542	3708	3875	4042	15	4208	4375	4542	4708	4875	15	5042	5208	5375	5542	5708	15	5875	6042	6208	6375	6542
3378	3544	3711	3878	4044	16	4211	4378	4544	4711	4878	16	5044	5211	5378	5544	5711	16	5878	6044	6211	6378	6544
3380	3547	3714	3880	4047	17	4214	4380	4547	4714	4880	17	5047	5214	5380	5547	5714	17	5880	6047	6214	6380	6547
3383	3550	3717	3883	4050	18	4217	4383	4550	4717	4883	18	5050	5217	5383	5550	5717	18	5883	6050	6217	6383	6550
3386	3553	3719	3886	4053	19	4219	4386	4553	4719	4886	19	5053	5219	5386	5553	5719	19	5886	6053	6219	6386	6553
3389	3555	3722	3889	4055	20	4222	4389	4555	4722	4889	20	5055	5222	5389	5555	5722	20	5889	6055	6222	6389	6555
3392	3558	3725	3892	4058	21	4225	4392	4558	4725	4892	21	5058	5225	5392	5558	5725	21	5892	6058	6225	6392	6558
3394	3561	3728	3894	4061	22	4228	4394	4561	4728	4894	22	5061	5228	5394	5561	5728	22	5894	6061	6228	6394	6561
3397	3564	3730	3897	4064	23	4230	4397	4564	4730	4897	23	5064	5230	5397	5564	5730	23	5897	6064	6230	6397	6564
3400	3567	3733	3900	4067	24	4233	4400	4567	4733	4900	24	5067	5233	5400	5567	5733	24	5900	6067	6233	6400	6567
3403	3569	3736	3903	4069	25	4236	4403	4569	4736	4903	25	5069	5236	5403	5569	5736	25	5903	6069	6236	6403	6569
3405	3572	3739	3905	4072	26	4239	4405	4572	4739	4905	26	5072	5239	5405	5572	5739	26	5905	6072	6239	6405	6572
3408	3575	3742	3908	4075	27	4242	4408	4575	4742	4908	27	5075	5242	5408	5575	5742	27	5908	6075	6242	6408	6575
3411	3578	3744	3911	4078	28	4244	4411	4578	4744	4911	28	5078	5244	5411	5578	5744	28	5911	6078	6244	6411	6578
3414	3580	3747	3914	4080	29	4247	4414	4580	4747	4914	29	5080	5247	5414	5580	5747	29	5914	6080	6247	6414	6580
3417	3583	3750	3917	4083	30	4250	4417	4583	4750	4917	30	5083	5250	5417	5583	5750	30	5917	6083	6250	6417	6583
3419	3586	3753	3919	4086	31	4253	4419	4586	4753	4919	31	5086	5253	5419	5586	5753	31	5919	6086	6253	6419	6586
3422	3589	3755	3922	4089	32	4255	4422	4589	4755	4922	32	5089	5255	5422	5589	5755	32	5922	6089	6255	6422	6589
3425	3592	3758	3925	4092	33	4258	4425	4592	4758	4925	33	5092	5258	5425	5592	5758	33	5925	6092	6258	6425	6592
3428	3594	3761	3928	4094	34	4261	4428	4594	4761	4928	34	5094	5261	5428	5594	5761	34	5928	6094	6261	6428	6594
3430	3597	3764	3930	4097	35	4264	4431	4597	4764	4930	35	5097	5264	5431	5597	5764	35	5930	6097	6264	6431	6597
3433	3600	3767	3933	4100	36	4267	4433	4600	4767	4933	36	5100	5267	5433	5600	5767	36	5933	6100	6267	6433	6600
3436	3603	3769	3936	4103	37	4269	4436	4603	4769	4936	37	5103	5269	5436	5603	5769	37	5936	6103	6269	6436	6603
3439	3605	3772	3939	4105	38	4272	4439	4605	4772	4939	38	5105	5272	5439	5605	5772	38	5939	6105	6272	6439	6605
3442	3608	3775	3942	4108	39	4275	4442	4608	4775													

TABLE XIX:—Ghatikas and Palas (Naligais and Vinadis) as Fractions of a day.—*contd.*

N.B.—The same table will serve for minutes and seconds as fractions of an Hour or a Degree.

Ghatikas.					Palas.	Ghatikas.					Palas.	Ghatikas.					Palas.	Ghatikas.				
40	41	42	43	44		45	46	47	48	49		50	51	52	53	54		55	56	57	58	59
·6667	·6833	·7000	·7167	·7333	0	·7500	·7667	·7833	·8000	·8167	0	·8333	·8500	·8667	·8833	·9000	0	·9167	·9333	·9500	·9667	·9833
·6669	·6836	·7003	·7169	·7336	1	·7503	·7669	·7836	·8003	·8169	1	·8336	·8503	·8669	·8836	·9003	1	·9169	·9336	·9503	·9669	·9836
·6672	·6839	·7006	·7172	·7339	2	·7506	·7672	·7839	·8006	·8172	2	·8339	·8506	·8672	·8839	·9006	2	·9172	·9339	·9506	·9672	·9839
·6675	·6842	·7008	·7175	·7342	3	·7508	·7675	·7842	·8008	·8175	3	·8342	·8508	·8675	·8842	·9008	3	·9175	·9342	·9508	·9675	·9842
·6678	·6844	·7011	·7178	·7344	4	·7511	·7678	·7844	·8011	·8178	4	·8344	·8511	·8678	·8844	·9011	4	·9178	·9344	·9511	·9678	·9844
·6680	·6847	·7014	·7180	·7347	5	·7514	·7680	·7847	·8014	·8180	5	·8347	·8514	·8680	·8847	·9014	5	·9180	·9347	·9514	·9680	·9847
·6683	·6850	·7017	·7183	·7350	6	·7517	·7683	·7850	·8017	·8183	6	·8350	·8517	·8683	·8850	·9017	6	·9183	·9350	·9517	·9683	·9850
·6686	·6853	·7019	·7186	·7353	7	·7519	·7686	·7853	·8019	·8186	7	·8353	·8519	·8686	·8853	·9019	7	·9186	·9353	·9519	·9686	·9853
·6689	·6855	·7022	·7189	·7355	8	·7522	·7689	·7855	·8022	·8189	8	·8355	·8522	·8689	·8855	·9022	8	·9189	·9355	·9522	·9689	·9855
·6692	·6858	·7025	·7192	·7358	9	·7525	·7692	·7858	·8025	·8192	9	·8358	·8525	·8692	·8858	·9025	9	·9192	·9358	·9525	·9692	·9858
·6694	·6861	·7028	·7194	·7361	10	·7528	·7694	·7861	·8028	·8194	10	·8361	·8528	·8694	·8861	·9028	10	·9194	·9361	·9528	·9694	·9861
·6697	·6864	·7030	·7197	·7364	11	·7530	·7697	·7864	·8030	·8197	11	·8364	·8530	·8697	·8864	·9030	11	·9197	·9364	·9530	·9697	·9864
·6700	·6867	·7033	·7200	·7367	12	·7533	·7700	·7867	·8033	·8200	12	·8367	·8533	·8700	·8867	·9033	12	·9200	·9367	·9533	·9700	·9867
·6703	·6869	·7036	·7203	·7369	13	·7536	·7703	·7869	·8036	·8203	13	·8369	·8536	·8703	·8869	·9036	13	·9203	·9369	·9536	·9703	·9869
·6705	·6872	·7039	·7205	·7372	14	·7539	·7705	·7872	·8039	·8205	14	·8372	·8539	·8705	·8872	·9039	14	·9205	·9372	·9539	·9705	·9872
·6708	·6875	·7042	·7208	·7375	15	·7542	·7708	·7875	·8042	·8208	15	·8375	·8542	·8708	·8875	·9042	15	·9208	·9375	·9542	·9708	·9875
·6711	·6878	·7044	·7211	·7378	16	·7544	·7711	·7878	·8044	·8211	16	·8378	·8544	·8711	·8878	·9044	16	·9211	·9378	·9544	·9711	·9878
·6714	·6880	·7047	·7214	·7380	17	·7547	·7714	·7880	·8047	·8214	17	·8380	·8547	·8714	·8880	·9047	17	·9214	·9380	·9547	·9714	·9880
·6717	·6883	·7050	·7217	·7383	18	·7550	·7717	·7883	·8050	·8217	18	·8383	·8550	·8717	·8883	·9050	18	·9217	·9383	·9550	·9717	·9883
·6719	·6886	·7053	·7219	·7386	19	·7553	·7719	·7886	·8053	·8219	19	·8386	·8553	·8719	·8886	·9053	19	·9219	·9386	·9553	·9719	·9886
·6722	·6889	·7055	·7222	·7389	20	·7555	·7722	·7889	·8055	·8222	20	·8389	·8555	·8722	·8889	·9055	20	·9222	·9389	·9555	·9722	·9889
·6725	·6892	·7058	·7225	·7392	21	·7558	·7725	·7892	·8058	·8225	21	·8392	·8558	·8725	·8892	·9058	21	·9225	·9392	·9558	·9725	·9892
·6728	·6894	·7061	·7228	·7394	22	·7561	·7728	·7894	·8061	·8228	22	·8394	·8561	·8728	·8894	·9061	22	·9228	·9394	·9561	·9728	·9894
·6730	·6897	·7064	·7230	·7397	23	·7564	·7730	·7897	·8064	·8230	23	·8397	·8564	·8730	·8897	·9064	23	·9230	·9397	·9564	·9730	·9897
·6733	·6900	·7067	·7233	·7400	24	·7567	·7733	·7900	·8067	·8233	24	·8400	·8567	·8733	·8900	·9067	24	·9233	·9400	·9567	·9733	·9900
·6736	·6903	·7069	·7236	·7403	25	·7569	·7736	·7903	·8069	·8236	25	·8403	·8569	·8736	·8903	·9069	25	·9236	·9403	·9569	·9736	·9903
·6739	·6905	·7072	·7239	·7405	26	·7572	·7739	·7905	·8072	·8239	26	·8405	·8572	·8739	·8905	·9072	26	·9239	·9405	·9572	·9739	·9905
·6742	·6908	·7075	·7242	·7408	27	·7575	·7742	·7908	·8075	·8242	27	·8408	·8575	·8742	·8908	·9075	27	·9242	·9408	·9575	·9742	·9908
·6744	·6911	·7078	·7244	·7411	28	·7578	·7744	·7911	·8078	·8244	28	·8411	·8578	·8744	·8911	·9078	28	·9244	·9411	·9578	·9744	·9911
·6747	·6914	·7080	·7247	·7414	29	·7580	·7747	·7914	·8080	·8247	29	·8414	·8580	·8747	·8914	·9080	29	·9247	·9414	·9580	·9747	·9914
·6750	·6917	·7083	·7250	·7417	30	·7583	·7750	·7917	·8083	·8250	30	·8417	·8583	·8750	·8917	·9083	30	·9250	·9417	·9583	·9750	·9917
·6753	·6919	·7086	·7253	·7419	31	·7586	·7753	·7919	·8086	·8253	31	·8419	·8586	·8753	·8919	·9086	31	·9253	·9419	·9586	·9753	·9919
·6755	·6922	·7089	·7255	·7422	32	·7589	·7755	·7922	·8089	·8255	32	·8422	·8589	·8755	·8922	·9089	32	·9255	·9422	·9589	·9755	·9922
·6758	·6925	·7092	·7258	·7425	33	·7592	·7758	·7925	·8092	·8258	33	·8425	·8592	·8758	·8925	·9092	33	·9258	·9425	·9592	·9758	·9925
·6761	·6928	·7094	·7261	·7428	34	·7594	·7761	·7928	·8094	·8261	34	·8428	·8594	·8761	·8928	·9094	34	·9261	·9428	·9594	·9761	·9928
·6764	·6930	·7097	·7264	·7430	35	·7597	·7764	·7930	·8097	·8264	35	·8430	·8597	·8764	·8930	·9097	35	·92642				

TABLE XX:—Hours and Minutes as Fractions of a Day.

Minutes.	Hours.				Minutes.	Hours.				Minutes.	Hours.				Minutes.	Seconds of hours as fractions of a day.	
	0	1	2	3		4	5	6	7		8	9	10	11			
0	...	·0416666	·0833333	·1250000	0	·1666666	·2083333	·2500000	·2916666	0	·3333333	·3750000	·4166666	·4583333	0	...	
1	·0006944	·0423611	·0840277	·1256944	1	·1673611	·2090277	·2506944	·2923611	1	·3340277	·3756944	·4173611	·4590277	1	·00001	
2	·0013888	·0430555	·0847222	·1263888	2	·1680555	·2097222	·2513888	·2930555	2	·3347222	·3763888	·4180555	·4597222	2	·00002	
3	·0020833	·0437500	·0854166	·1270833	3	·1687500	·2104166	·2520833	·2937500	3	·3354166	·3770832	·4187500	·4604166	3	·00003	
4	·0027777	·0444444	·0861111	·1277777	4	·1694444	·2111111	·2527777	·2944444	4	·3361111	·3777777	·4194444	·4611111	4	·00005	
5	·0034722	·0451388	·0868055	·1284722	5	·1701388	·2118055	·2534722	·2951388	5	·3368055	·3784722	·4201388	·4618055	5	·00006	
6	·0041666	·0458333	·0875000	·1291666	6	·1708333	·2125000	·2541666	·2958333	6	·3375000	·3791666	·4208333	·4625000	6	·00007	
7	·0048611	·0465277	·0881944	·1298611	7	·1715277	·2131944	·2548611	·2965277	7	·3381944	·3798611	·4215277	·4631944	7	·00008	
8	·0055555	·0472222	·0888888	·1305555	8	·1722222	·2138888	·2555555	·2972222	8	·3388888	·3805555	·4222222	·4638888	8	·00009	
9	·0062500	·0479166	·0895833	·1312500	9	·1729166	·2145833	·2562500	·2979166	9	·3395833	·3812500	·4229166	·4645833	9	·00010	
10	·0069444	·0486111	·0902777	·1319444	10	·1736111	·2152777	·2569444	·2986111	10	·3402777	·3819444	·4236111	·4652777	10	·00012	
11	·0076388	·0493055	·0909722	·1326388	11	·1743055	·2159722	·2576388	·2993055	11	·3409722	·3826388	·4243055	·4659722	11	·00013	
12	·0083333	·0500000	·0916666	·1333333	12	·1750000	·2166666	·2583333	·3000000	12	·3416666	·3833333	·4250000	·4666666	12	·00014	
13	·0090277	·0506944	·0923611	·1340277	13	·1756944	·2173611	·2590277	·3006944	13	·3423611	·3840277	·4256944	·4673611	13	·00015	
14	·0097222	·0513888	·0930555	·1347222	14	·1763888	·2180555	·2597222	·3013888	14	·3430555	·3847222	·4263888	·4680555	14	·00016	
15	·0104166	·0520833	·0937500	·1354166	15	·1770333	·2187500	·2604166	·3020833	15	·3437500	·3854166	·4270833	·4687500	15	·00017	
16	·0111111	·0527777	·0944444	·1361111	16	·1777777	·2194444	·2611111	·3027777	16	·3444444	·3861111	·4277777	·4694444	16	·00018	
17	·0118055	·0534722	·0951388	·1368055	17	·1784722	·2201388	·2618055	·3034722	17	·3451388	·3868055	·4284722	·4701388	17	·00020	
18	·0125000	·0541666	·0958333	·1375000	18	·1791666	·2208333	·2625000	·3041666	18	·3458333	·3875000	·4291666	·4708333	18	·00021	
19	·0131944	·0548611	·0965277	·1381944	19	·1798611	·2215277	·2631944	·3048611	19	·3465277	·3881944	·4298611	·4715277	19	·00022	
20	·0138888	·0555555	·0972222	·1388888	20	·1805555	·2222222	·2638888	·3055555	20	·3472222	·3888888	·4305555	·4722222	20	·00023	
21	·0145833	·0562500	·0979166	·1395833	21	·1812500	·2229166	·2645833	·3062500	21	·3479166	·3895833	·4312500	·4729166	21	·00024	
22	·0152777	·0569444	·0986111	·1402777	22	·1819444	·2236111	·2652777	·3069444	22	·3486111	·3902777	·4319444	·4736111	22	·00025	
23	·0159722	·0576388	·0993055	·1409722	23	·1826388	·2243055	·2659722	·3076388	23	·3493055	·3909722	·4326388	·4743055	23	·00027	
24	·0166666	·0583333	·1000000	·1416666	24	·1833333	·2250000	·2666666	·3083333	24	·3500000	·3916666	·4333333	·4750000	24	·00028	
25	·0173611	·0590277	·1006944	·1423611	25	·1840277	·2256944	·2673611	·3090277	25	·3506944	·3923611	·4340277	·4756944	25	·00029	
26	·0180555	·0597222	·1013888	·1430555	26	·1847222	·2263888	·2680555	·3097222	26	·3513888	·3930555	·4347222	·4763888	26	·00030	
27	·0187500	·0604166	·1020833	·1437500	27	·1854166	·2270833	·2687500	·3104166	27	·3520833	·3937500	·4354166	·4770833	27	·00031	
28	·0194444	·0611111	·1027777	·1444444	28	·1861111	·2277777	·2694444	·3111111	28	·3527777	·3944444	·4361111	·4777777	28	·00032	
29	·0201388	·0618055	·1034722	·1451388	29	·1868055	·2284722	·2701388	·3118055	29	·3534722	·3951388	·4368055	·4784722	29	·00034	
30	·0208333	·0625000	·1041666	·1458333	30	·1875000	·2291666	·2708333	·3125000	30	·3541666	·3958333	·4375000	·4791666	30	·00035	
31	·0215277	·0631944	·1048611	·1465277	31	·1881944	·2298611	·2715277	·3131944	31	·3548611	·3965277	·4381944	·4798611	31	·00036	
32	·0222222	·0638888	·1055555	·1472222	32	·1888888	·2305555	·2722222	·3138888	32	·3555555	·3972222	·4388888	·4805555	32	·00037	
33	·0229166	·0645833	·1062500	·1479166	33	·1895833	·2312500	·2729166	·3145833	33	·3562500	·3979166	·4395833	·4812500	33	·00038	
34	·0236111	·0652777	·1069444	·1486111	34	·1902777	·2319444	·2736111	·3152777	34	·3569444	·3986111	·4402777	·4819444	34	·00039	
35	·0243055	·0659722	·1076388	·1493055	35	·1909722	·2326388	·2743055	·3159722	35	·3576388	·3993055	·4409722	·4826388	35	·00040	
36	·0250000	·0666666	·1083333	·1500000	36	·1916666	·2333333	·2750000	·3166666	36	·3583333	·4000000	·4416666	·4833333	36	·00042	
37	·0256944	·0673611	·1090277	·1506944	37	·1923611	·2340277	·2756944	·3173611	37	·3590277	·4006944	·4423611	·4840277	37	·00043	
38	·0263888	·0680555	·1097222	·1513888	38	·1930555	·2347222	·2763888	·3180555	38	·3597222	·4013888	·4430555	·4847222	38	·00044	
39	·0270833	·0687500	·1104166	·1520833	39	·1937500	·2354166	·2770833	·3187500	39	·3604166	·4020833	·4437500	·4854166	39	·00045	
40	·0277777	·0694444	·1111111	·1527777	40	·1944444	·2361111	·2777777	·3194444	40	·3611111	·4027777	·4444444	·4861111	40	·00046	
41	·0284722	·0701388	·1118055	·1534722	41	·1951388	·2368055	·2784722	·3201388	41	·3618055	·4034722	·4451388	·4868055	41	·00047	
42	·0291666	·0708333	·1125000	·1541666	42	·1958333	·2375000	·2791666	·3208333	42	·3625000	·4041666	·4458333	·4875000	42	·00049	
43	·0298611	·0715277	·1131944	·1548611	43	·1965277	·2381944	·2798611	·3215277	43	·3631944	·4048611	·4465277	·4881944	43	·00050	
44	·0305555	·0722222	·1138888	·1555555	44	·1972222	·2388888	·2805555	·3222222	44	·3638888	·4055555	·4472222	·4888888	44	·00051	
45	·0312500	·0729166	·1145833	·1562500	45	·1979166	·2395833	·2812500	·3229166	45	·3645833	·4062500	·4479166	·4895833	45	·00052	
46	·0319444	·0736111	·1152777	·1569444	46	·1986111	·2402777	·2819444	·3236111	46	·3652777	·4069444	·4486111	·4902777	46	·00053	
47	·0326388	·0743055	·1159722	·1576388	47	·1993055	·2409722	·2826388	·3243055	47	·3659722	·4076388	·4493055	·4909722	47	·00054	
48	·0333333	·0750000	·1166666	·1583333	48	·2000000	·2416666	·2833333	·3250000	48	·3666666	·4083333	·4500000	·4916666	48	·00055	
49	·0340277	·0756944	·1173611	·1590277	49	·2006944	·2423611	·2840277	·3256944	49	·3673611	·4090277	·4506944	·4923611	49	·00057	
50	·0347222	·0763888	·1180555	·1597222	50	·2013888	·2430555	·2847222	·3263888	50	·3680555	·4097222	·4513888	·4930555	50	·00058	
51	·0354166	·0770833	·1187500	·1604166	51	·2020833	·2437500	·2854166	·3270833	51	·3687500	·4104166	·4520833	·4937500	51	·00059	
52	·0361111	·0777777	·1194444	·1611111	52	·2027777	·2444444	·2861111	·3277777	52	·3694444	·4111111	·4527777	·4944444	52	·00060	
53	·0368055	·0784722	·1201388	·1618055	53	·2034722	·2451388	·2868055	·3284722	53	·3701388	·4118055	·4534722	·4951388	53	·00061	
54	·0375000	·0791666	·1208333	·1625000	54	·2041666	·2458333	·2875000	·3291666	54	·3708333	·4125000	·4541666	·4958333	54	·00062	
55	·0381944	·0798611	·1215277	·1631944	55	·2048611	·2465277	·2881944	·3298611	55	·3715277	·4131944	·4548611	·4965277	55	·00064	
56	·0388888	·0805555	·1222222	·1638888	56	·2055555	·2472222	·2888888	·3305555	56	·3722222	·4138888	·4555555	·4972222	56	·00065	
57	·0395833	·0812500	·1229166	·1645833	57	·2062500	·2479166	·2895833	·3312500	57	·3729166	·4145833	·4562500	·4979166	57	·00066	
58	·0402777	·0819444	·1236111	·1652777	58	·2069444	·2486111</										

TABLE XX:— Hours and Minutes as Fractions of a Day—*contd.*

Minutes.	Hours.				Minutes.	Hours.				Minutes.	Hours.				Minutes.	Hours.				Seconds of hours as fractions of a day.
	12	13	14	15		16	17	18	19		20	21	22	23		24	25	26	27	
0	5000000	5416666	5833333	6250000	0	6666666	7083333	7500000	7916666	0	8333333	8750000	9166666	9583333	0					0
1	5006944	5423611	5840277	6256944	1	6673611	7090277	7506944	7923611	1	8340277	8756944	9173611	9590277	1					1
2	5013888	5430555	5847222	6263888	2	6680555	7097222	7513888	7930555	2	8347222	8763888	9180555	9597222	2					2
3	5020833	5437500	5854166	6270833	3	6687500	7104166	7520833	7937500	3	8354166	8770833	9187500	9604166	3					3
4	5027777	5444444	5861111	6277777	4	6694444	7111111	7527777	7944444	4	8361111	8777777	9194444	9611111	4					4
5	5034722	5451388	5868055	6284722	5	6701388	7118055	7534722	7951388	5	8368055	8784722	9201388	9618055	5					5
6	5041666	5458333	5875000	6291666	6	6708333	7125000	7541666	7958333	6	8375000	8791666	9208333	9625000	6					6
7	5048611	5465277	5881944	6298611	7	6715277	7131944	7548611	7965277	7	8381944	8798611	9215277	9631944	7					7
8	5055555	5472222	5888888	6305555	8	6722222	7138888	7555555	7972222	8	8388888	8805555	9222222	9638888	8					8
9	5062500	5479166	5895833	6312500	9	6729166	7145833	7562500	7979166	9	8395833	8812500	9229166	9645833	9					9
10	5069444	5486111	5902777	6319444	10	6736111	7152777	7569444	7986111	10	8402777	8819444	9236111	9652777	10					10
11	5076388	5493055	5909722	6326388	11	6743055	7159722	7576388	7993055	11	8409722	8826388	9243055	9659722	11					11
12	5083333	5500000	5916666	6333333	12	6750000	7166666	7583333	8000000	12	8416666	8833333	9250000	9666666	12					12
13	5090277	5506944	5923611	6340277	13	6756944	7173611	7590277	8006944	13	8423611	8840277	9256944	9673611	13					13
14	5097222	5513888	5930555	6347222	14	6763888	7180555	7597222	8013888	14	8430555	8847222	9263888	9680555	14					14
15	5104166	5520833	5937500	6354166	15	6770833	7187500	7604166	8020833	15	8437500	8854166	9270833	9687500	15					15
16	5111111	5527777	5944444	6361111	16	6777777	7194444	7611111	8027777	16	8444444	8861111	9277777	9694444	16					16
17	5118055	5534722	5951388	6368055	17	6784722	7201388	7618055	8034722	17	8451388	8868055	9284722	9701388	17					17
18	5125000	5541666	5958333	6375000	18	6791666	7208333	7625000	8041666	18	8458333	8875000	9291666	9708333	18					18
19	5131944	5548611	5965277	6381944	19	6798611	7215277	7631944	8048611	19	8465277	8881944	9298611	9715277	19					19
20	5138888	5555555	5972222	6388888	20	6805555	7222222	7638888	8055555	20	8472222	8888888	9305555	9722222	20					20
21	5145833	5562500	5979166	6395833	21	6812500	7229166	7645833	8062500	21	8479166	8895833	9312500	9729166	21					21
22	5152777	5569444	5986111	6402777	22	6819444	7236111	7652777	8069444	22	8486111	8902777	9319444	9736111	22					22
23	5159722	5576388	5993055	6409722	23	6826388	7243055	7659722	8076388	23	8493055	8909722	9326388	9743055	23					23
24	5166666	5583333	6000000	6416666	24	6833333	7250000	7666666	8083333	24	8500000	8916666	9333333	9750000	24					24
25	5173611	5590277	6006944	6423611	25	6840277	7256944	7673611	8090277	25	8506944	8923611	9340277	9756944	25					25
26	5180555	5597222	6013888	6430555	26	6847222	7263888	7680555	8097222	26	8513888	8930555	9347222	9763888	26					26
27	5187500	5604166	6020833	6437500	27	6854166	7270833	7687500	8104166	27	8520833	8937500	9354166	9770833	27					27
28	5194444	5611111	6027777	6444444	28	6861111	7277777	7694444	8111111	28	8527777	8944444	9361111	9777777	28					28
29	5201388	5618055	6034722	6451388	29	6868055	7284722	7701388	8118055	29	8534722	8951388	9368055	9784722	29					29
30	5208333	5625000	6041666	6458333	30	6875000	7291666	7708333	8125000	30	8541666	8958333	9375000	9791666	30					30
31	5215277	5631944	6048611	6465277	31	6881944	7298611	7715277	8131944	31	8548611	8965277	9381944	9798611	31					31
32	5222222	5638888	6055555	6472222	32	6888888	7305555	7722222	8138888	32	8555555	8972222	9388888	9805555	32					32
33	5229166	5645833	6062500	6479166	33	6895833	7312500	7729166	8145833	33	8562500	8979166	9395833	9812500	33					33
34	5236111	5652777	6069444	6486111	34	6902777	7319444	7736111	8152777	34	8569444	8986111	9402777	9819444	34					34
35	5243055	5659722	6076388	6493055	35	6909722	7326388	7743055	8159722	35	8576388	8993055	9409722	9826388	35					35
36	5250000	5666666	6083333	6500000	36	6916666	7333333	7750000	8166666	36	8583333	9000000	9416666	9833333	36					36
37	5256944	5673611	6090277	6506944	37	6923611	7340277	7756944	8173611	37	8590277	9006944	9423611	9840277	37					37
38	5263888	5680555	6097222	6513888	38	6930555	7347222	7763888	8180555	38	8597222	9013888	9430555	9847222	38					38
39	5270833	5687500	6104166	6520833	39	6937500	7354166	7770833	8187500	39	8604166	9020833	9437500	9854166	39					39
40	5277777	5694444	6111111	6527777	40	6944444	7361111	7777777	8194444	40	8611111	9027777	9444444	9861111	40					40
41	5284722	5701388	6118055	6534722	41	6951388	7368055	7784722	8201388	41	8618055	9034722	9451388	9868055	41					41
42	5291666	5708333	6125000	6541666	42	6958333	7375000	7791666	8208333	42	8625000	9041666	9458333	9875000	42					42
43	5298611	5715277	6131944	6548611	43	6965277	7381944	7798611	8215277	43	8631944	9048611	9465277	9881944	43					43
44	5305555	5722222	6138888	6555555	44	6972222	7388888	7805555	8222222	44	8638888	9055555	9472222	9888888	44					44
45	5312500	5729166	6145833	6562500	45	6979166	7395833	7812500	8229166	45	8645833	9062500	9479166	9895833	45					45
46	5319444	5736111	6152777	6569444	46	6986111	7402777	7819444	8236111	46	8652777	9069444	9486111	9902777	46					46
47	5326388	5743055	6159722	6576388	47	6993055	7409722	7826388	8243055	47	8659722	9076388	9493055	9909722	47					47
48	5333333	5750000	6166666	6583333	48	7000000	7416666	7833333	8250000	48	8666666	9083333	9500000	9916666	48					48
49	5340277	5756944	6173611	6590277	49	7006944	7423611	7840277	8256944	49	8673611	9090277	9506944	9923611	49					49
50	5347222	5763888	6180555	6597222	50	7013888	7430555	7847222	8263888	50	8680555	9097222	9513888	9930555	50					50
51	5354166	5770833	6187500	6604166	51	7020833	7437500	7854166	8270833	51	8687500	9104166	9520833	9937500	51					51
52	5361111	5777777	6194444	6611111	52	7027777	7444444	7861111	8277777	52	8694444	9111111	9527777	9944444	52					52
53	5368055	5784722	6201388	6618055	53	7034722	7451388	7868055	8284722	53	8701388	9118055	9534722	9951388	53					53
54	5375000	5791666	6208333	6625000	54	7041666	7458333	7875000	8291666	54	8708333	9125000	9541666	9958333	54					54
55	5381944	5798611	6215277	6631944	55	7048611	7465277	7881944	8298611	55	8715277	9131944	9548611	9965277	55					55
56	5388888	5805555	6222222	6638888	56	7055555	7472222	7888888	8305555	56	8722222	9138888	9555555	9972222	56					56
57	5395833	5812500	6229166	6645833	57	7062500	7479166	7895833	8312500	57	8729166	9145833	9562500	9979166	57					57
58	5402777	5819444	6236111	6652777	58	7069444	7486111	7902777	8319444	58	8736111	9152777	9569444	9986111	58					58
59	5409722	5826388	6243055	6659722	59	7076388	7493055	7909722	8326388	59	8743055	9159722	9576388	9993055	59					

TABLE XXI.—Navamsas.

Nav.	Long.	Nav. Sign.	Nav.	Long.	Nav. Sign.	Nav.	Long.	Nav. Sign.	Nav.	Long.	Nav. Sign.	Nav.	Long.	Nav. Sign.
1	3·3	I	1	63·3	VII	1	123·3	I	1	183·3	VII	1	243·3	I
2	6·6	II	2	66·6	VIII	2	126·6	II	2	186·6	VIII	2	246·6	II
3	10·0	III	3	70·0	IX	3	130·0	III	3	190·0	IX	3	250·0	III
4	13·3	IV	4	73·3	X	4	133·3	IV	4	193·3	X	4	253·3	IV
5	16·6	V	5	76·6	XI	5	136·6	V	5	196·6	XI	5	256·6	V
6	20·0	VI	6	80·0	XII	6	140·0	VI	6	200·0	XII	6	260·0	VI
7	23·3	VII	7	83·3	I	7	143·3	VII	7	203·3	I	7	263·3	VII
8	26·6	VIII	8	86·6	II	8	146·6	VIII	8	206·6	II	8	266·6	VIII
9	30·0	IX	9	90·0	III	9	150·0	IX	9	210·0	III	9	270·0	IX
1	33·3	X	1	93·3	IV	1	153·3	X	1	213·3	IV	1	273·3	X
2	36·6	XI	2	96·6	V	2	156·6	XI	2	216·6	V	2	276·6	XI
3	40·0	XII	3	100·0	VI	3	160·0	XII	3	220·0	VI	3	280·0	XII
4	43·3	I	4	103·3	VII	4	163·3	I	4	223·3	VII	4	283·3	I
5	46·6	II	5	106·6	VIII	5	166·6	II	5	226·6	VIII	5	286·6	II
6	50·0	III	6	110·0	IX	6	170·0	III	6	230·0	IX	6	290·0	III
7	53·3	IV	7	113·3	X	7	173·3	IV	7	233·3	X	7	293·3	IV
8	56·6	V	8	116·6	XI	8	176·6	V	8	236·6	XI	8	296·6	V
9	60·0	VI	9	120·0	XII	9	180·0	VI	9	240·0	XII	9	300·0	VI

TABLE XXII.—Ahargana.

CENTURIES.

A.D.	K.Y.	Days.	A.D.	K.Y.	Days.	A.D.	K.Y.	Days.	A.D.	K.Y.	Days.	A.D.	K.Y.	Days.
101 B.C.	3001	1096141·28	400	3501	1278770·66	900	4001	1461400·03	1400	4501	1644029·41	1900	5001	1826658·79
1 B.C.	3101	1132667·15	500	3601	1315296·53	1000	4101	1497925·91	1500	4601	1680555·29	2000	5101	1863184·67
100 A.D.	3201	1169193·03	600	3701	1351822·41	1100	4201	1534451·78	1600	4701	1717081·16	3000	5201	2228443·42
200	3301	1205718·90	700	3801	1388348·28	1200	4301	1570977·66	1700	4801	1753607·04	4000	5301	2593702·18
300	3401	1242244·78	800	3901	1424874·16	1300	4401	1607503·54	1800	4901	1790132·91	5000	5401	2958960·94

N.B.—For centuries prior to 1 B.C. (3101 K.Y.), subtract from the ahargana for 1 B.C. the ahargana for 100, 200.....3000 years as the case may be according to last column of next table. Supposing we want the ahargana for Rama's birthday (according to Bentley), viz., the 33rd day of Solar Year 962 B.C. (i.e., 39th year of century beginning with B.C. 1001),

Days.					
We have B.C. 1	Ahargana	...	...	...	1132667·15
Deduct for 1000 years	Do.	...	...	...	—365258·76
					767408·39
Add for 39 years	Do.	...	...	...	+14245·09
Do. 33 days	Do.	...	...	...	+33·00

B.C. 962, 33rd day of Solar Year,

781686·48

Ahargana required.

ODD YEARS.

Yrs.	Days.	Yrs.	Days.	Yrs.	Days.	Yrs.	Days.	Yrs.	Days.	Yrs.	Days.
1	365·26	21	7670·43	41	14975·61	61	22281·78	81	29585·95	200	73051·75
2	730·52	22	8035·69	42	15340·87	62	22646·04	82	29951·22	300	109577·63
3	1095·78	23	8400·95	43	15706·13	63	23011·30	83	30316·48	400	146103·50
4	1461·03	24	8766·21	44	16071·38	64	23376·56	84	30681·73	500	182629·38
5	1826·29	25	9131·47	45	16436·64	65	23741·82	85	31046·99	600	219155·25
6	2191·55	26	9496·73	46	16801·90	66	24107·08	86	31412·25	700	255681·13
7	2556·81	27	9861·99	47	17167·16	67	24472·34	87	31777·51	800	292207·00
8	2922·07	28	10227·24	48	17532·42	68	24837·59	88	32142·77	900	328732·88
9	3287·33	29	10592·50	49	17897·68	69	25202·85	89	32508·03	1000	365258·76
10	3652·59	30	10957·76	50	18262·94	70	25568·11	90	32873·29	2000	730517·51
11	4017·85	31	11323·02	51	18628·20	71	25933·37	91	33238·55	3000	1095776·27
12	4383·10	32	11688·28	52	18993·45	72	26298·63	92	33603·80	4000	1461035·03
13	4748·36	33	12053·54	53	19358·71	73	26663·89	93	33969·06	5000	1826293·78
14	5113·62	34	12418·80	54	19723·97	74	27029·15	94	34334·32		
15	5478·88	35	12784·06	55	20089·23	75	27394·41	95	34699·58		
16	5844·14	36	13149·31	56	20454·49	76	27759·66	96	35064·84		
17	6209·40	37	13514·57	57	20819·75	77	28124·92	97	35430·10		
18	6574·66	38	13879·83	58	21185·01	78	28490·18	98	35795·36		
19	6939·92	39	14245·09	59	21550·27	79	28855·44	99	36160·62		
20	7305·17	40	14610·35	60	21915·52	80	29220·70	100	36525·88		

Models for Compendious Working of Tithis, Nakshatras and Yogas.

These models are chiefly intended to illustrate the use of the Eye Table, which is a companion to Tables VIII, IX, X, XI, XII and XVII for finding longitudes, rasis, solar dates and, lastly and chiefly, the ending moments of any Tithi, Nakshatra, or Yoga.

Table XII and Eye-Table.—Lunar Tithis (A.D. 1840—A.D. 1920).

Required the ending moment of (Lunar) Ashada Sukla Ashtami, Saka 1832, Vik. 1967.

Mean ending moment of		d.	gh.	p.		☉'s Anom.	☾'s Anom.
Ashadha New Moon Saka 1832.						d. gh.	d. gh.
(Table XII) A.D. 1910. ...	Jl.	7	10	57			
Collective duration of 8 tithis (Eye-Table)		7	52	29	☉'s Eqn. (Eye-Tab.)	gh. 84 58	4 29
					☾'s Eq. (Eye-Tab.)	—2	7 52
Ending moment of mean Tithi ...	Jl.	15	3	26			
Sum of ☉'s and ☾'s Equations ...			—11			92 50	12 21
	Jl.	14	52			—11	—2 (☉'s eqn.)
							12 19

The ending moment of the tithi (Lanka time) was, therefore, 52 ghatikas after Lanka sunrise on 14 July 1910. If we want local time, we should use Table XIII.

Tables XII, XI and IX-i:—Nakshatras and Yogas (A.D. 1840—A.D. 1920). Eye-Table not used.

Required the ending moment of Krittika Nakshatra for the month of July 1910.

Since Ashadha New Moon fell on 7 July 1910 and Krittika Nakshatra in Ashadha ends about 25 days from New moon (Table XI) which would take us into August, we take the previous New moon.

	d.	gh.	p.		d.	gh.	p.	☉'s Anom.
(Tab. XII) Jyeshtha New Moon ... A. D. 1910.					Je. 7	39	7	d. gh. p. 2 30 40
(Tab. XI-A) Longest interval from								
Jyesh. New Moon to Krit. (No. 3) Nak. ...	28	18	39					
(Tab. XI-A) Deduct for Nak. in S.Y. A.D. 1910 ...	1	56	18		26	22	21	26 22 21
	26	22	21		Je. 34	1	28	28 53 1
(Tab. IX-i) ☾'s Nak. Eqn. for An. of 1 d. 19 gh. 44 p.						—6	20	27 33 17 Anom. month
					33 Je. i.e., Jl. 3,	55	8	1 19 44

The ending moment of Krittika Nakshatra in July 1910, was 55 ghatikas after Lanka sunrise on 3 July 1910. If we want local time, we should use Table XIII.

For Yogas proceed similarly, but add together ☉'s and ☾'s Yoga Eqns. by Tab. IX-i.

Table X and Eye-Table.—Lunar Tithis (ANY YEAR IN TAB. X).

This method will be of immense service to Epigraphists who will require the English equivalents of thousands of tithis ranging from 1 B.C. to modern times. With Table X and the Eye-Table the operation can be performed in less than a minute. Thus, *Required the ending moment of Ashada Sukla 12, A.D. 484, K.Y. 3585.*

Mean ending moment of Ashada New moon Tithi. A.D. 484 (Table X).	Week-day. 7	Month and day. Je. 9	Fraction of day. .67	☉'s Eqn. —.04. (Eye-Tab.)	☉'s Anom. 24.39	☾'s Anom. 4.49
Collective duration of 12 tithis (Eye-Tab.)	11	11	.81	☾'s Eqn. +.41 (Eye-Tab.)	59.06	3.95
	+1*				83.45	8.44
Sum of ☉'s and ☾'s Equations	19	21	.48	+37	11.81	11.81
	...	...	+37		95.26	20.25
(19-14)=	5	21	.85			—04 (☉'s Eqn.)
						20.21

ANSWER.—Thursday, 21 June A.D. 484, at .85 (i.e., by Eye-Table, 51 ghatikas or 20½ hours) after sunrise (Lanka time). The absolutely correct time differs from the above by only 11 palas, as we may see at p. 91, Sec. 259 of the text.

* When the sum of the several fractions of a day in the column headed *fraction of day* exceeds unity, we should add 1 to the "Week-day" column.

TABLES XVII, XI, X, VIII, V, III, AND EYE-TABLE.—NAKSHATRAS AND YOGAS

THREE ALTERNATIVE METHODS TO CHOOSE FROM. (ANY YEAR IN TAB. X). Table IX not used.

Required the Nakshatra current at the ending moment of above Tithi.

By Table VIII (last col.) the sun's long. for Nak. corresponding to 95 days of the solar year is. 7.5051
By Table V (last col.) ☉'s long. for .26 day is02

☉'s long. corresponding to 95.26 days ... 7.53
Add Tithi equivalent in days ... 11.81
19.34

By Table III, at 19.34 days of lunation space, the Nakshatra current is the 18th, i.e., Jyeshtha. This, then, was the Nakshatra current at the ending moment of Ash. Suk. 12, A.D. 484.

SECOND METHOD

We may calculate directly from Tab. XVII-A and C (pp. 207, 209), ☉'s long. for 95.26 days of Solar year, i.e., $91.49^\circ - 54^\circ + 26^\circ = 91.21^\circ$. Add ☾'s—☉'s long. i.e., No. of tithi $\times 12^\circ = 12 \times 12^\circ = 144^\circ$

Total ... 235.21°
This, by Eye-Tab. is the long. of Nakshatra Jyeshtha.

THIRD METHOD BY TABLE XI, FOR ENDING MOMENT OF NAKSHATRA.

Annual correction for Nakshatras for A.D. 484 is that for 24.39, i.e., $1.79 + .03 = 1.82$ (Tab. X and XI).

The ending moment of No. 18 Nak. in Lunar Ashada was $13.95 - 1.82 = 12.13$ days from the new moon, i.e., .32 of a day after the mean tithi, whose ending moment is 11.81 days from New moon.

The ☾'s anom. then was .32 more than that of the tithi, i.e., 20.57, for which the Nak. eqn. is +.38 (Eye-Tab.). The ending moment of the Nak. No. 18, i.e., Jyeshtha, was, therefore, $.48 + .32 + .38 = 1.18$ or .18 of a day after sunrise on the next day after the 21st June.

Yoga current at ending moment of above tithi.
 $2 \times \text{☉'s Longitude as in 1st column} = 182.42^\circ$
Add. ☾'s—☉'s long. = No. of Tithi $\times 12^\circ = 144^\circ$

Total ... 326.42°
This, by Eye-Tab., is the long. of Yoga Brahman.

Order of Signs of Zodi	9	10	11	12
Bengal Solar months	Pausa	Magha	Phalguna	Chaitra
Malayalam Solar months	Dhanus	Makaram	Kumbham	Minam

Nakshatras	Satabhishaj	Pur. Bhadr.	Utt. Bhadr.	Revati
YOGAS	Sukla	Brahman	Indra	Vaidhriti
Longitude at Planet	24	25	26	27
also longitude, at com	306° 40'	320° 0'	333° 20'	346° 40'

Ghatikas		and + are to be applied to the equation and not to the anomaly.)								
Days	Ghat. (neg. °)	17	18	19	20	21	22	23	24	25
Do.	do.	3, 35	3, 51	4, 8	4, 26	4, 46	5, 8	5, 34	6, 8	7, 18
		0, 46	10, 32	10, 17	10, 1	9, 43	9, 22	8, 59	8, 26	7, 20
Do.	(pos. °)	6, 47	17, 2	17, 16	17, 33	17, 50	18, 11	18, 35	19, 7	20, 15
Do.	do.	3, 58	23, 42	23, 25	23, 7	22, 47	22, 25	21, 59	21, 25	20, 17
ations, with appropriate signs, in heavy type. <i>Reverse Sign for Yogas.</i>)										
Ghatikas		-4	-5	-6	-7	-8	-9	-10	-10½	-11
Days		102	108	115	122	129	138	150	160	167
Do.		241	235	229	222	215	205	193	183	177

29-53059 d. (1 Syn. 1		hrs., 12 min., 37 sec.		Minutes							
Fraction of a day=		21	22	23	14	29	44				
		.87	.92	.96	.01	.02	.03				
n Sol. Year)=365 d., 15 gh., 32 p.											
Do.	do.	=	21	22	23	24	25	26	27	28	29 30
			.35	.37	.38	.40	.42	.43	.45	.47	.48 .50
Do.	do.	=	51	52	53	54	55	56	57	58	59
			.85	.87	.88	.90	.92	.93	.95	.97	.98 ...

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N.B.—References to the Text are by Section in *Arabic* numerals, not by page, unless the page is specially indicated ; similarly, references to the Tables are by the *Roman number* of the Table (and occasionally by page, which is then specially indicated). Thus “ 215 ” means “ Section 215 of the Text ” and “ II ” means “ Table II ”. Arabic numerals placed between brackets (except when a page of the Text is indicated), refer to the numbers of subparagraphs or sub-entries. Thus “ 112 (16)”, “ XIII-A (82) ”, “ XIV (57)”, “ I (15)”. The names of (12) signs of the Zodiac, (15) Tithis, (27) Nakshatras, (27) Yogas, (8) Karanas, (60) years in Jupiter’s Cycle (Northern and Southern Systems), places whose latitude and longitude are given in Tables XIII and XIII-A, festivals noted under tithis, (21) eras noted under Sec. 112 etc., etc., have all been carefully indexed by references to Section, Table and sub-number.

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